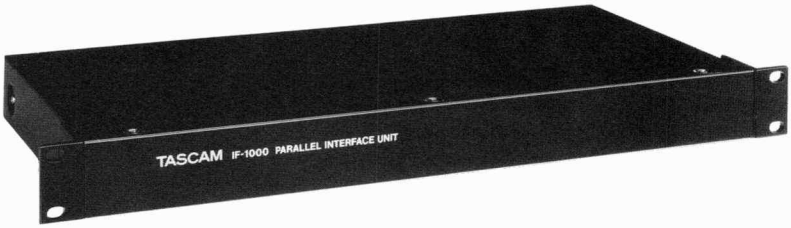
TASCAM

TEAC Professional Division

MIDiiZER

MTS-1000/IF-1000

Multi Synchronizer/Controller **Parallel Interface Unit**



OPERATION MANUAL

5700110600

The guarantee provided with the MTS-1000/IF-1000 is not limitless. The MTS-1000/IF-1000 will provide the correct control of your machines only when properly interfaced and calibrated to match the characteristics of the machines. If you try to use any connections that are not based on good scientific, technical principles or your attempts to make internal adjustments/settings are unsuccessful, then we will charge you for readjustments and repairs.

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CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

This appliance has a serial number located on the rear panel. Please record the model number and serial number and retain them for your records.
Model number _____
Serial number _____

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

SAFETY INSTRUCTIONS

CAUTION:

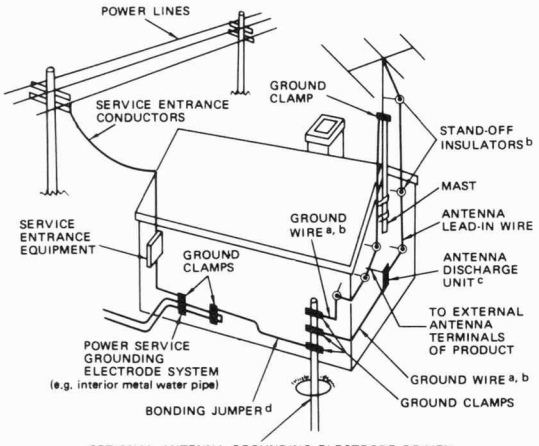
- **Read all of these instructions.**
- **Save these instructions for later use.**
- **Follow all warnings and instructions marked on the audio equipment.**

1. **Read Instructions** – All the safety and operating instructions should be read before the appliance is operated.
2. **Retain Instructions** – The safety and operating instructions should be retained for future reference.
3. **Heed Warnings** – All warnings on the appliance and in the operating instructions should be adhered to.
4. **Follow Instructions** – All operating and use instructions should be followed.
5. **Water and Moisture** – The appliance should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
6. **Carts and Stands** – The appliance should be used only with a cart or stand that is recommended by the manufacturer.

6A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

7. **Wall or Ceiling Mounting** – The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. **Ventilation** – The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. **Heat** – The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. **Power Sources** – The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. **Grounding or Polarization** – The precautions that should be taken so that the grounding or polarization means of an appliance is not defeated.
12. **Power-Cord Protection** – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. **Cleaning** – The appliance should be cleaned only as recommended by the manufacturer.
14. **Power Lines** – An outdoor antenna should be located away from power lines.
15. **Outdoor Antenna Grounding** – If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70 – 1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure below.

EXAMPLE OF ANTENNA GROUNDING ACCORDING TO NATIONAL ELECTRICAL CODE INSTRUCTIONS CONTAINED IN ARTICLE 810 – "RADIO AND TELEVISION EQUIPMENT"


POWER LINES
SERVICE ENTRANCE CONDUCTORS
GROUND CLAMP
STAND-OFF INSULATORS b
MAST
ANTENNA LEAD-IN WIRE
SERVICE ENTRANCE EQUIPMENT
GROUND WIRE a, b
GROUND CLAMPS
ANTENNA DISCHARGE UNIT c
TO EXTERNAL ANTENNA TERMINALS OF PRODUCT
POWER SERVICE GROUNDING ELECTRODE SYSTEM (e.g. interior metal water pipe)
GROUND WIRE a, b
GROUND CLAMPS
BONDING JUMPER d
OPTIONAL ANTENNA GROUNDING ELECTRODE DRIVEN 8 FEET (2.44 m) INTO THE EARTH IF REQUIRED BY LOCAL CODES. SEE NEC SECTION 810 – 21 (f).

a. Use No. 10 AWG (5.3 mm²) copper, No. 8 AWG (8.4 mm²) aluminum, No. 17 AWG (1.0 mm²) copper-clad steel or bronze wire, or larger, as a ground wire.

b. Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4 feet (1.22 m) to 6 feet (1.83 m) apart.

c. C mount antenna discharge unit as close as possible to where lead-in enters house.

d. Use jumper wire not smaller than No. 6 AWG (13.3 mm².) copper, or the equivalent, when a separate antenna-grounding electrode is used. See NEC Section 810-21(j).

16. **Nonuse Periods** – The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
17. **Object and Liquid Entry** – Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
18. **Damage Requiring Service** – The appliance should be serviced by qualified service personnel when:
    A. The power-supply cord or the plug has been damaged; or
    B. Objects have fallen, or liquid has been spilled into the appliance; or
    C. The appliance has been exposed to rain; or
    D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
    E. The appliance has been dropped, or the enclosure damaged.
19. **Servicing** – The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

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Appendix: Setting Chart for TASCAM Tape Recorders

Introduction

The TASCAM MIDiiZER combines a SMPTE tape transport synchronizer with a MIDI-to-SMPTE synchronizer in a single low-cost unit. It is used to make different machines—in this case two tape transports, plus sequencers or rhythm units—play at exactly the same rate of speed, from any desired starting point. This is called "chase-lock" capability. When the MIDiiZER is connected to these other units, it becomes the all-in-one master controller for the system.

With the MIDiiZER, the optional interface cables, and the proper transports and MIDI devices you can:

- Synchronize two multi-track recorders together (for example, two MSR-16s can be synchronized to yield 30 audio tracks);
- Synchronize a multi-track recorder (such as the TASCAM 238 or MSR-16) to a video cassette recorder;
- Synchronize MIDI sequencers to SMPTE time code so they can chase-lock to a tape recorder;
- Build "tempo maps" so MIDI sequencers will speed up or slow down at specific SMPTE code times. Tempo maps can be built by MIDI clock input, audio clicks, tap entry with the key or foot switch tapping, or from the internal tempo generator and editor;
- Generate and read all formats of SMPTE/EBU time code;
- Store a "tempo map" up to 9600 beats long, and save that information to a MIDI file or RAM cards;
- Remote control (Play, Rewind etc.) 2 transports from a single key pad;
- Control REC FUNCTION (track select) on TASCAM multi-track recorders with serial interfaces;
- Perform punch-in and out operations with SMPTE frame accuracy automatically on the slave machine, with adjustable pre- and post roll;
- Auto-locate tape transports and sequencers to any SMPTE frame or bar/beat location, regardless of where it is in a sequence, and store up to 20 locations in memory for quick entry and recall of cue points;
- Synchronize older (pre-MIDI) sequencers and rhythm machines to tape;
- Advance or delay (offset) the slave transport or the MIDI sequencer relative to the master time code;
- Translate SMPTE to MIDI Time Code (MTC) for MIDI sequencers capable of using it;
- Generate audible click metronome outputs, either line level or through the internal speaker, with a count-in before the start of a sequence;
- Generate MIDI Program changes at specific SMPTE frame locations for on-cue switching of synthesizer or MIDI effects device patches;
- Use the internal time code generator as a master clock for the MIDI system, so sequencers can be used without tape running.

The optional IF-1000 Parallel Interface Unit is required to:

- Synchronize transports with parallel interfaces (such as the TASCAM MS-16 and 40 Series, most VCRs, or machines made by other manufacturers);
- Send transport commands to most video cassette recorders;
- "Roll in" special effects (events) on cue from contact-closure devices such as cart machines or CD players.

NOTE: Many tape transports are not capable of being externally controlled by the MIDiiZER or any other synchronizer. They may serve as the master, but not as the slave transport. Consult your dealer if you are not sure whether or not the transports you want to use have external sync capability.

Precautions and Recommendation

1. In order to synchronize transports you must first learn how to:
   a) Properly hook up the machines, master and slave, with the correct interface and audio cables.
   b) Set the DIP switches on the MIDiiZER's rear panel to match the machines/devices involved. They are factory set as follows:

      T/C SELECT------- 30 NDF (Non Drop Frame)
      TIME BASE ------- 24 PPQ;
      FM SERVO ------- 9.6 kHz
      I/F SELECT ------- SERIAL-SERIAL

   c) Stripe (record) time code on a track of the master and slave machines.
   d) Run the set-up procedure to allow the MIDiiZER to learn the dynamic transport characteristics of both master and slave machines.

   In order to synchronize MIDI to SMPTE you must learn how to:
   e) Define the Song No.
   f) Set the time signature.
   g) Build a Tempo Map.
   h) Set the MIDI start time.
   i) Set your sequencer to follow external MIDI commands.

2. The MIDiiZER does not come with interface cables because of the differences of the connectors on machines. For technical information about the interface cables, contact TASCAM or your nearest TASCAM dealer.

3. If you lose control of the system or the machines appear to be going in the wrong directions, press the SHIFT and STOP keys simultaneously to stop the

system. The master and slave machines and MIDI devices will all stop at once. You can then find and correct the problem.

4. DIN cables used for hooking up pre-MIDI sequencers look the same as MIDI cables, but they are quite different in pin wiring and are not interchangeable. For connection to sequencers or other MIDI devices, be sure to use cables specified as MIDI cable.

5. The MIDiiZER is equipped with a PPQ (Pulse-Per-Quarter) OUT, to be used with pre-MIDI sequencers (also called DIN sequencers or PPQ sequencers). They achieve synchronization by assigning a number of pulses to each quarter note. The number of pulses is called "Time Base". To control those devices the MIDiiZER must be set, to match the Time Base (and also the pulse phase). This method of PPQ synchronization is not standardized; different manufacturs use different methods. The MIDiiZER's rear panel DIP switch can be set to match most manufacturers' requirements. It is best to check the manual on your product before changing the factory settings. NEVER CONNECT THE PPQ OUTPUT TO A MIDI JACK.

6. Some early MIDI sequencers do not respond to Song Position Pointer commands. This means they can synchronize from the start point, but not from the middle of a song. If you have a problem check the MIDI implementation chart for your units.

ADVANSEL!
Lithiumbatteri — Eksplosionsfare.
Udskiftning mä kun foretages af en sagkeyndig,
og som beskrevet i servicemanualen.

This product is manufactured to comply with the radio interference of EEC directive "82/499/EEC."

Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß der/die/das

MULTI-SYNCHRONISIER-GERÄT/STEUEREINHEIT MTS-1000
PARALLEL-INTERFACE IF-1000

(Gerät, Typ, Bezeichnung)

in Übereinstimmung mit den Bestimmungen der

AMTSBLATT 163/1984, VFG 1045/1984

(Amtsblattverfügung)

funk-entstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

TEAC CORPORATION

Name des Herstellers/Importeurs

VOLTAGE CONVERSION

This unit is adjusted to operate on the electric voltage specified on the unit or packing carton.

NOTE: This voltage conversion is not possible on models sold in the U.S.A., Canada, U.K., Austratia, or Europe.

For general export units, if it is necessary to change the voltage setting of the MIDiiZER to match your area, use the following procedures. ALWAYS DISCONNECT THE POWER LINE BEFORE MAKING THESE CHANGES.

1. Locate the voltage selector on the bottom panel of the MIDiiZER.

2. Using a regular (slot blade) screwdriver, turn the selector until the numerals corresponding to the voltage requirements for your area appear.

NOTE FOR U.K. CUSTOMERS

U.K. Customers Only:
Due to the variety of plugs being used in the U.K., this unit is sold without an AC plug. Please request your dealer to install the correct plug to match the mains power outlet where your unit will be used as per these instructions.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

BLUE:	**NEUTRAL**
BROWN:	**LIVE**

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloures markings identifying the terminals of your plug, proceed as follows.

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK. The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

THIS DIGITAL APPARATUS DOES NOT EXCEED THE CLASS B LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS AS SET OUT IN THE RADIO INTERFERENCE REGULATIONS OF THE CANADIAN DEPARTMENT OF COMMUNICATIONS.

LE PRESENT APPAREIL NUMERIQUE N'EMET PAS DE BRUITS RADIOELECTRIQUES DEPASSANT LES LIMITES APPLICABLES AUX APPAREILS NUMERIQUES DE CLASSE B PRESCRITES DANS LE REGLEMENT SUR LE BROUILLAGE RADIOELECTRIQUE EDICTE PAR LE MINISTERE DES COMMUNICATIONS DU CANADA.

What is SMPTE Time Code?

SMPTE is an acronym for the Society of Motion Picture and Television Engineers. The SMPTE Time Code (C98.12: time and control code for video and audio tape for 525/30 television system) was defined in 1970, and it is now accepted as a universal standard.

This reference is to an 80-bit digital code developed by SMPTE and used to designate the exact location in hours, minutes, seconds and frames (24 frames/sec. for film or 30 frames/sec. for video) on a film, video tape, or audio tape. Suitable equipment can synchronize ("lock up") two or more machines by using the SMPTE time code recorded on each.

SMPTE European Standard, that refers to 25 frames per second, states the EBU (abbrev. for European Broadcasting Union) time code when it is especially necessary to distinguish from the USA Standard with 30 frames per second.

A *time code generator* is used to record SMPTE code onto one track of the tape. A *time code controller* can then read the code from two or more tape machines, and by also servo-controlling the reel motors of those machines, bring them to specific cue points. A *time code synchronizer* further controls the capstan motors to keep both of the tape machines running synchronously. These techniques can be used to obtain more tracks for recording (two or more audio machines "locked up" together), to mix audio signals in sync with video or film images, to make complex edits by transferring material from one or more audio machines to another, and so forth.

What are MIDI clocks?

Musical information, on the other hand, usually relates "time" to tempo. Sequencers get their tempo from the ticking of a kind of electronic metronome, like a drummer listening to a click track in headphones. This ticking can be generated internally by the sequencer itself, or received from outside (via MIDI or other sync signal). Each tick advances the music by a certain amount: when a drummer hears a click, he knows a quarter note has passed; when a sequencer receives a MIDI clock it knows that 1/24 of a quarter note has passed (in electronics we need to have higher resolution, so there are 24 MIDI clock "ticks" per quarter note). Clocks are a part of the MIDI standard so that a rhythm machine and sequencer can start together and stay in tempo with each other. But like all MIDI signals, the MIDI clocks are actually bursts of digital information and can't be recorded directly onto analog tape.

Note that the "MIDI Clock" varies according to tempo, and acts like a metronome; it "ticks", but carries no information about what time or where in the song it is. If you've been counting metronome beats since the start, you know what bar and beat you're at. But if you've lost count or the metronome stops and starts again, you can't be sure where you are in the music. One of the problems of clock-driven sequencers of the past was that they could only synchronize from the beginning—you couldn't roll tape from the middle of the song and expect the sequencer to know where it was. To avoid this problem MIDI has a special message called Song Position Pointer that can tell MIDI sequencers where to go in a song. A controlling unit can say to a sequencer, "go to the 312th sixteenth note", and the sequencer will go to that point in the sequence, wait for a CONTINUE command, and play at a tempo according to the clocks it receives.

Note that the Song Position Pointer doesn't say anything about bars and beats—considering the number of possible time signatures etc. there could be in a sequence, this would be unnecessarily complex. It simply counts every six clocks as a sixteenth note (remember, 24 clocks equal a quarter note) and advances that far into the sequence. The bar and beat display is only calculated by the MIDiiZER for your convenience, according to the time signatures you have entered into the MIDiiZER's memory.

MIDI and SMPTE

SMPTE time code is not a substitute for MIDI clocks, nor is it "better" than MIDI clocks. It does a different job. Primarily it exists so a group of transports in a system have a uniform way of reporting their location, so that a unit like the MIDiiZER can compare the two and control the speed of the slave so it stays at the exact same time as the master. But SMPTE alone can't communicate musical tempo—for example, if a drummer were listening to headphones for a click track, and heard "the time is now 00:01:31:24" instead, he'd have no idea of when to start or how fast to play.

MIDI Clocks, on the other hand, aren't useful for getting audio and video transports to synchronize because they don't encode a unique address for each tick of the clock. If you fast forwarded to the middle of a song, you couldn't tell from the clocks whether the slave transport was at the same location as the master (although you could make them run at the same speed, called "resolving"). Besides, you want the transports to synchronize whether or not there is music present.

MIDI Time Code (MTC)

MIDI Time Code is not a new kind of time code. It is SMPTE time code that has been translated so it can be sent down a MIDI cable, so that devices that need SMPTE can get it via MIDI instead of having to provide their own analog-to-digital converter. The necessity of having a tempo map that relates frame numbers to bars and beats still exists for music sequencers that can read MTC. But such an MTC-based sequencer either has it own internal tempo map (similar in concept to that in the MIDiiZER) or is an "event" sequencer that is setting up sound effects, not musical scores. Note that if MTC has to be merged on the same MIDI cable with complex musical information, you approach the limits of how much information a MIDI buss can handle at one time and timing accuracy declines. Most MTC sequencers have two MIDI IN ports, one for MTC, another for master keyboard input.

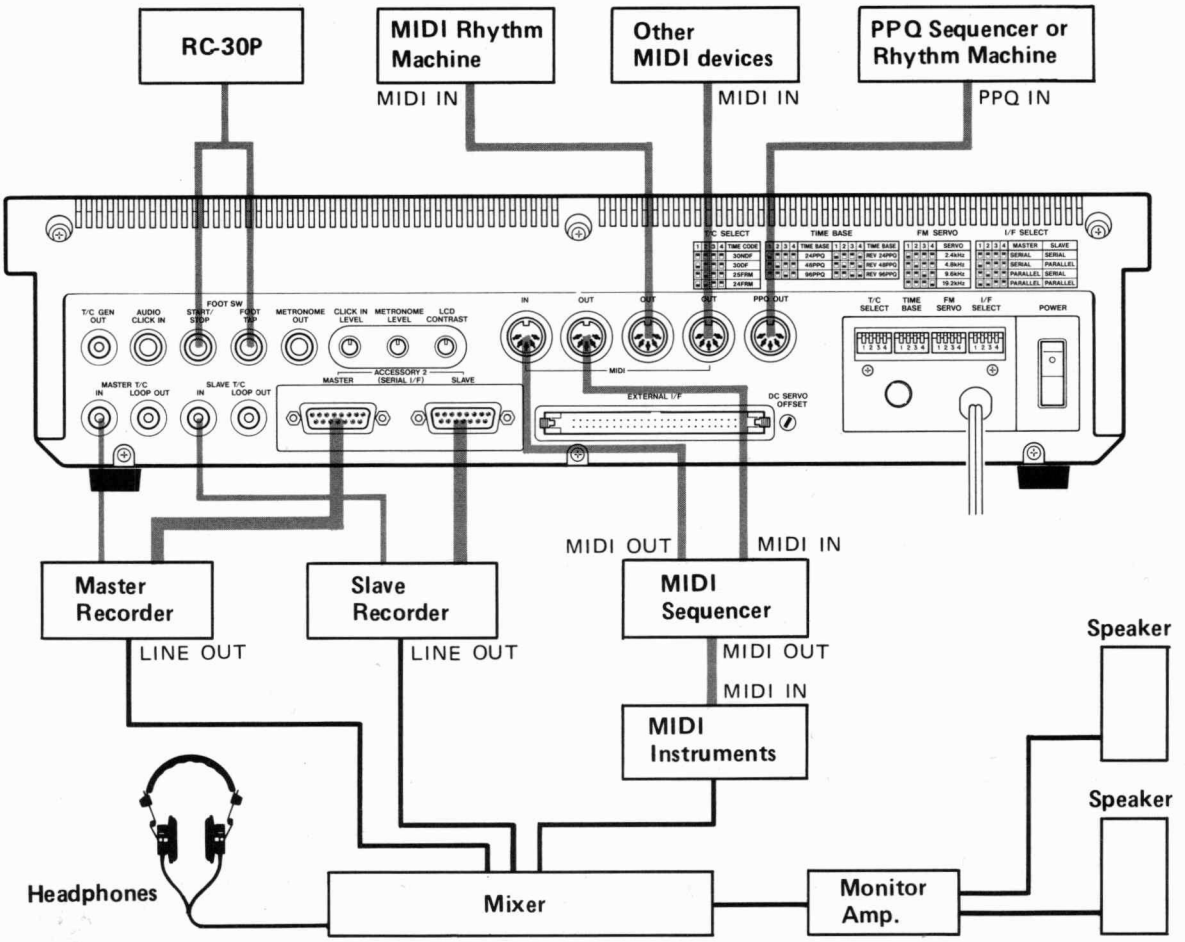
PPQ (Pulse-Pre-Quarter)

The MIDiiZER is equipped with a PPQ OUT, to be used with pre-MIDI sequencers (also called DIN sequencers or PPQ clock sequencers). They achieve synchronization with a 5 volt square wave clock, basically a voltage turned on and off according to the tempo desired. Unlike MIDI, different brands of sequencer used different numbers of pulses to each quarter note, and different polarities of voltage. The number of pulses is called the "Time Base", and is either 24, 48, or 96 pulses per quarter note. The Time Base acts in concept like MIDI clocks. If we again use the same analogy as we used above in explaining MIDI clocks, PPQ sequencers keep track by listening to the Time Base, like a drummer listening to a click track in headphones. PPQ signals don't carry messages similar to the Song Position Pointer in MIDI and are not able to start the associated machines/units from the middle of a song. Despite this downside PPQ is, for some musicians, still a tool so deeply rooted in their "framing" of musical creation that they adhere to that.

As far as timing is concerned, the MIDiiZER can control PPQ devices the same as it does MIDI devices; but since DIN SYNC carries only timing and no musical information, many other features (Program Change, Song Position Pointer) apply only to MIDI. Manual Play mode does send the proper tempo of clock out the PPQ output.

The MIDiiZER's Place in a System

The MIDiiZER is the central controlling element between a master tape recorder, slave tape recorder, and MIDI sequencer. They are connected to other elements of the system, such as a mixer, monitors, and MIDI instruments and controllers:



If the tape transports used are "serial controllable", like the TASCAM 238, they may be controlled directly by the MIDiiZER. If they are the "parallel control" type, such as the TASCAM MS-16, the IF-1000 (serial-to-parallel converter) must be connected between the MIDiiZER and the transport. See p. 46 for connection diagrams.

Any MIDI sequencer that can follow MIDI clocks can be connected to the MIDI OUT of the MIDiiZER. It must also be able to follow Song Position Pointer, START, STOP, and CONTINUE commands to "chase" to the middle of a sequence. See the MIDI implementation chart for your sequencer if you're not sure it has these features. Older pre-MIDI sequencers that use square wave clocks may be connected to the MIDiiZER PPQ port. For details on connection, see page 25.

MIDiiZER Functional Subsystems

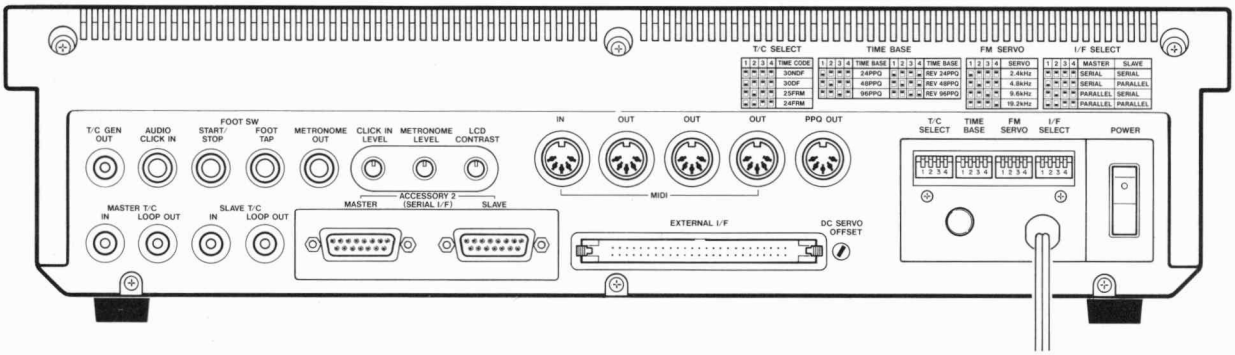
It will help you to understand the MIDiiZER's functions if you look at it as four different subsystems, each for a particular task. A unique feature of the MIDiiZER is that it combines the function of many different units in one.

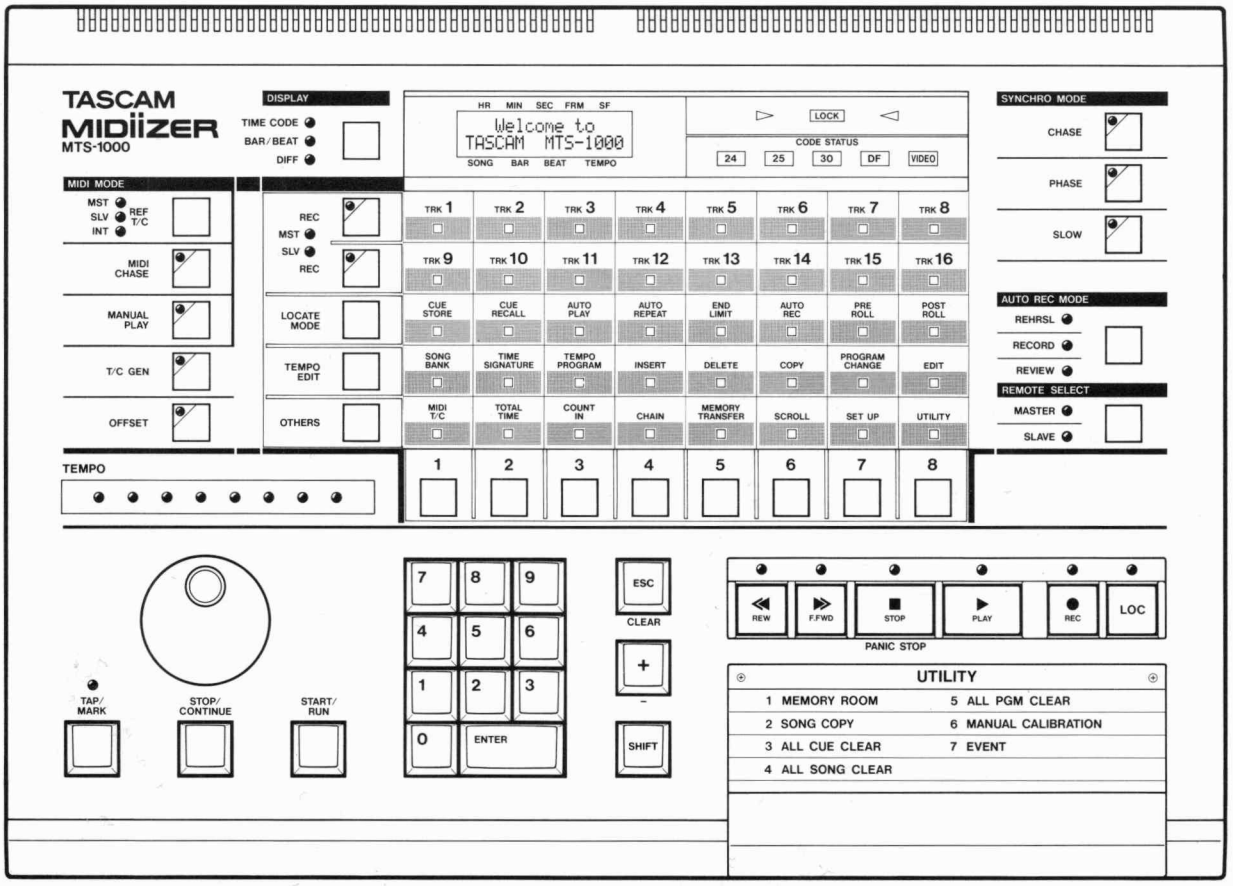
TRANSPORT SECTION: At its most basic, the MIDiiZER acts like a deluxe remote control and auto-locator for the tape transports connected to it. Rewind, Fast Forward, Stop, Play, Record, (and Rec Function if implemented) all work the same way as the buttons on the transport. The LOCate key and Locate Mode functions work like an autolocator—you can store 20 different cue points in the MIDiiZER's memory and "locate" the deck to those points, or play a section between two cues over and over. In addition, you can store two points for automated punch-in and out of record mode. Remote Select specifies which of two transports you wish to control—the master or the slave.

MIDI TEMPO MAP SECTION: This is the part of the MIDiiZER which memorizes the start time of a sequence, the SMPTE time and tempo of each quarter note, and the stop time. This memory acts as a "conductor", issuing Song Position Pointers and clocks at the proper time to the MIDI sequencer, which in turn has its own memory of what notes are to be played and "plays" the MIDI musical instruments.

SYNCHRONIZATION SECTION: Causes the slave transport to chase and lock to the master transport. The MIDiiZER reads SMPTE time code off a tape track of each deck in PLAY mode, compares the two, and issues "speed up" or "slow down" commands continually to the slave transport. In a fast wind mode when SMPTE time code cannot be read, it reads tachometer pulses from both transports to estimate where each transport is so both will arrive at the same point. In most circumstances the slave time code and master time code will be the same; but an offset can be entered so that one transport leads or lags the other by a certain number of hours, minutes, seconds, and frames. It can also ignore the absolute time code value on a tape and lock to the phase of the SMPTE wave form, when time code was cut or changed for some reason. This is PHASE LOCK mode.

SMPTE TIME CODE GENERATOR SECTION: This is the section that generates SMPTE code to be recorded on tape. There are different types of SMPTE codes designed for different film/video formats—Film, European television (PAL), Color television (NTSC) or black and white television. The MIDiiZER can generate all of these: SMPTE 30 non-drop frame, SMPTE drop frame, EBU 25 fps, and FILM 24 fps; show you what type of code it is receiving, and generate code from any time you specify (if none is specified, it will start from 00:59:30:00).


T/C SELECT
TIME BASE
FM SERVO
I/F SELECT
FOOT SW
T/C GEN OUT
AUDIO CLICK IN
START/ STOP
FOOT TAP
METRONOME OUT
CLICK IN LEVEL
METRONOME LEVEL
LCD CONTRAST
IN
OUT
OUT
OUT
PPQ OUT
MIDI
MASTER T/C IN
LOOP OUT
SLAVE T/C IN
LOOP OUT
ACCESSORY 2 (SERIAL I/F)
MASTER
SLAVE
EXTERNAL I/F
DC SERVO OFFSET
T/C SELECT
TIME BASE
FM SERVO
I/F SELECT
POWER


TASCAM
MIDiizER
MTS-1000
DISPLAY
TIME CODE
BAR/BEAT
DIFF
HR MIN SEC FRM SF
Welcome to
TASCAM MTS-1000
SONG BAR BEAT TEMPO
LOCK
CODE STATUS
24
25
30
DF
VIDEO
SYNCHRO MODE
CHASE
PHASE
SLOW
MIDI MODE
MST
SLV
INT
REF T/C
MIDI CHASE
MANUAL PLAY
T/C GEN
OFFSET
REC
MST
SLV
REC
LOCATE MODE
TEMPO EDIT
OTHERS
TRK 1
TRK 2
TRK 3
TRK 4
TRK 5
TRK 6
TRK 7
TRK 8
TRK 9
TRK 10
TRK 11
TRK 12
TRK 13
TRK 14
TRK 15
TRK 16
CUE STORE
CUE RECALL
AUTO PLAY
AUTO REPEAT
END LIMIT
AUTO REC
PRE ROLL
POST ROLL
SONG BANK
TIME SIGNATURE
TEMPO PROGRAM
INSERT
DELETE
COPY
PROGRAM CHANGE
EDIT
MIDI T/C
TOTAL TIME
COUNT IN
CHAIN
MEMORY TRANSFER
SCROLL
SET UP
UTILITY
AUTO REC MODE
REHRSL
RECORD
REVIEW
REMOTE SELECT
MASTER
SLAVE
TEMPO
1
2
3
4
5
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7
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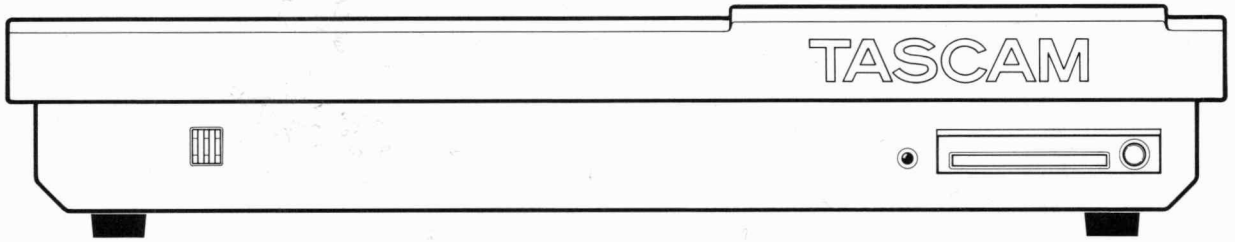
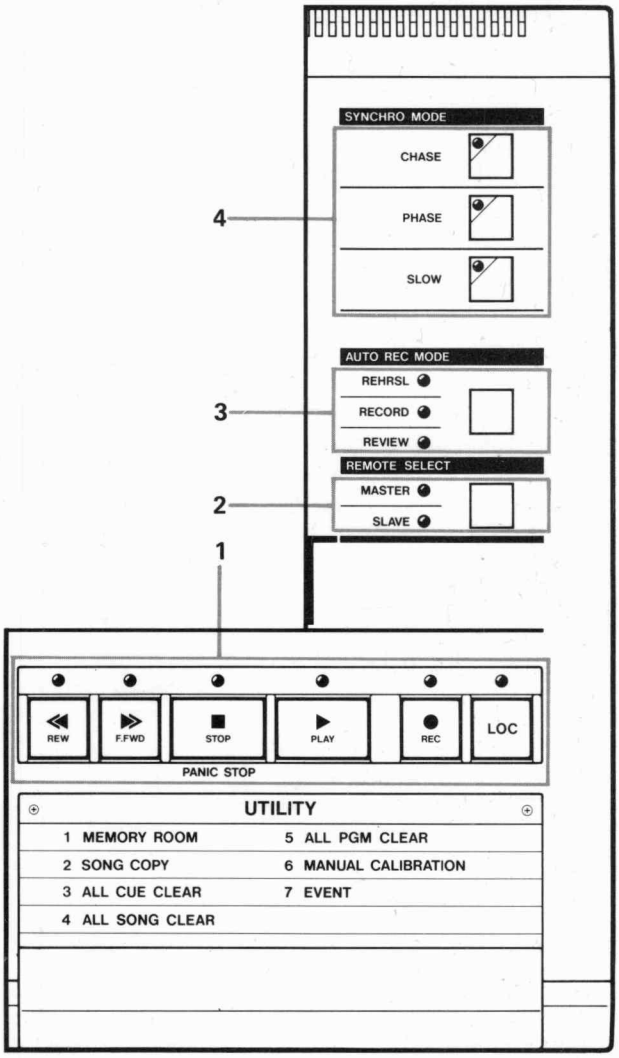
TAP/ MARK
STOP/ CONTINUE
START/ RUN
7
8
9
4
5
6
1
2
3
0
ENTER
ESC
CLEAR
+
-
SHIFT
REW
F.FWD
STOP
PLAY
REC
LOC
PANIC STOP
UTILITY
1 MEMORY ROOM
2 SONG COPY
3 ALL CUE CLEAR
4 ALL SONG CLEAR
5 ALL PGM CLEAR
6 MANUAL CALIBRATION
7 EVENT


TASCAM

The following is intended to expand the overview of the MIDiiZER you've gotten so far. Use this Guided Tour as a reference. It is not necessary to memorize nor to try to understand all details to get started. Take the time to skim through this section at least once to gain a basic familiarity with the unit before you use a function.

Right Side: Transport and Synchro controls



1. TRANSPORT CONTROL KEYS:

These buttons work the same as on the transport, except:

- The LOCate key sends the chosen transport to the cue point that was last chosen by the CUE RECALL feature.
- The STOP key functions as an "Panic Stop" when pushed at the same time as the SHIFT key; this will stop both transports (regardless of the current mode) and send "all notes off" command out the MIDI buss.
- The REC key is used for manual recording and is not used in AUTO REC mode.

2. REMOTE SELECT key and LEDs:

Selects whether the master or slave will be controlled by the transport keys and the Rec Function keys (TRK 1 – 16).

Note that in CHASE mode, both machines will move when the MASTER is controlled. If you select SLAVE, the slave will fight to return to lock with the master until you turn CHASE off.

3. SYNCHRO MODE KEYS:

CHASE: When CHASE is pressed (LED lit), the slave will chase to the master, using the necessary control functions. When the MIDiiZER has located the slave to the correct point, it locks the slave to the master by controlling the slave's capstan servo. Once locked, the slave will follow the master regardless of transport mode. If you want to run the slave independently of the master, CHASE must be off.

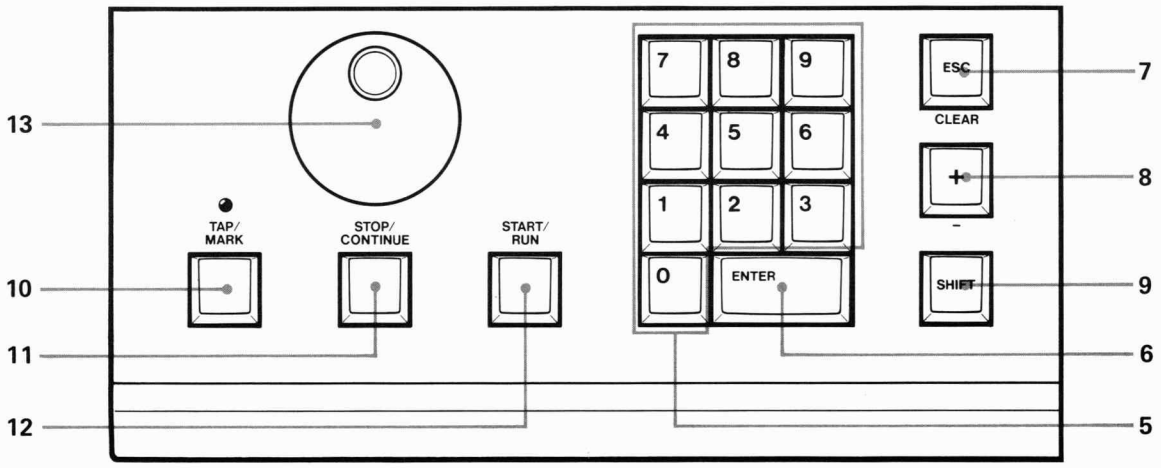
PHASE: This button is used in combination with chase. The slave is locked to the master using the "sync word" of timecode ignoring the actual numerical address. This is also called "resolving" or "Phase Lock". When PHASE is used in conjunction with the CHASE function, the slave will chase and lock to the actual timecode address and then drop into "Phase Lock". Thereafter, each time the address difference between the machines reaches a certain limit, the slave will enter CHASE mode to recapture the master.

SLOW: When SLOW is used together with CHASE or PHASE, the synchronizer overrides a sudden, slight change in the timecode by nudging the slave back into sync without causing noticeable pitch variation ("Slow Lock" or "Soft Lock").

4. AUTO REC MODE key:

This key is used when you want to automatically punch-in and out at particular time code frames, and selects between the three stages of this mode: Rehearsal (where the points are entered and checked for accuracy), Record (the actual punch-in), and Review (to check the performance).

Lower Left side: Data Entry keys



5. 10-key Numeric Keypads:
Used to input numbers directly into most functions. Also used to select menu items during programing the MIDiiZER's various functions.

6. ENTER key:
This key is the main key for making things happen on the MIDiiZER. In many cases you will enter data with the 10-key or rotary dial, and pressing ENTER records the data into memory and moves you to the next mode.

7 ESC (Escape)/CLEAR key:
Turns the LCD screen back to the main screen, getting out of the current mode, or getting out of an ERROR display. It also functions as a clear key when pushed at the same time as the SHIFT key, turning the LCD screen back to the beginning screen of the current mode.

8. + (plus)/– (minus) key:
This is usually a "cursor" key – it moves the cursor (the line under a character) forward to different characters in the LCD screen so you can change individual numbers or letters in an entry. The cursor will move one space with each push. To move backward one space at a time, press the "+" and SHIFT keys simultaneously.

When setting an offset, use this key to generate a plus or minus sign, indicating that the slave should be ahead or behind the master time code.

9. SHIFT key:
Used to alter the function of other keys (as in 7 and 8 above). It works like the shift key on a typewriter; you hold it down while pressing another key, to get a different result than that key normally has.

- SHIFT and REF T/C: To change REF T/C from MST/SLV to INT.
- SHIFT and STOP: "PANIC STOP" key; to stop all devices being connected to MIDiiZER.
- SHIFT and ESC: "CLEAR" key; to turn the LCD display back to the beginning screen of the current mode.
- SHIFT and "+": "–" key; to move the cursor backward.
- SHIFT and MANUAL PLAY: To set the time signature in Manual Play.

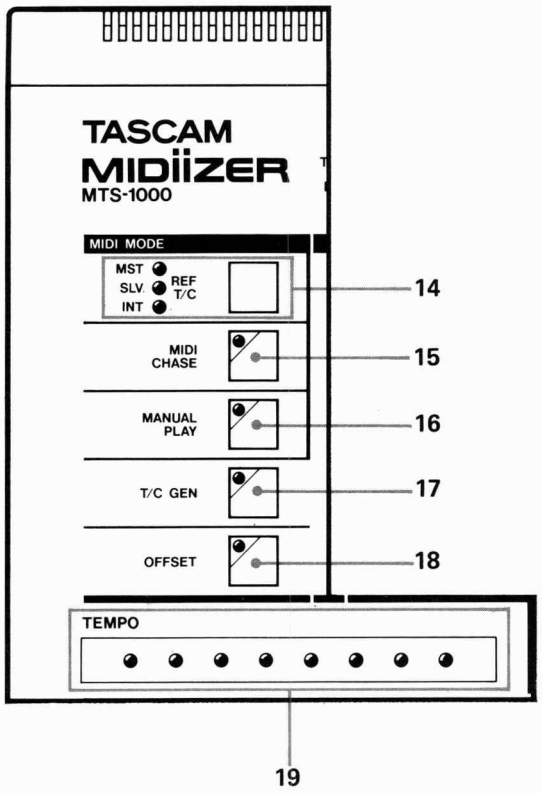
10. TAP/MARK key:
As a MARK key, hit this key to store a SMPTE time code location as a cue point "on the fly" while tape is moving, without having to use the ten key. It is used in Tempo Program mode as a TAP key to manually enter beats so a MIDI sequencer can follow a "human" tempo.

11. STOP/CONTINUE key:
This key has two uses, depending on the mode. In T/C GEN mode it stops or continues the internal SMPTE time code generator. In MIDI CHASE or MANUAL PLAY mode it sends STOP or CONTINUE commands to a MIDI sequencer. In both cases, "continue" means "continue playing (or generating time code) from the last point it was stopped, instead of starting from the beginning".

12. START/RUN key:
As above, this is used either to start the internal SMPTE time code generator, or to start a MIDI sequencer from the beginning of its sequence.

13. ROTARY DIAL:
This is mainly used to scroll the contents of the memory in SCROLL mode. Also used to scroll up or down the characters of the alphabet above cursor in the LCD screen by turning it clockwise or counter-clockwise. In MANUAL PLAY mode, it controls the tempo of MIDI clocks sent to the sequencer.

Upper Left side: MIDI and Time Code keys



14. REF T/C (Reference Time Code) SELECT key and LEDs:

This key and the three LEDs controlled by it indicate which time code the MIDI sequencer will chase or use as its "master": the master transport (MST), slave (SLV), or the INTernal SMPTE time code generator. The one you select with this key will be shown in the main LCD screen. Chasing the internal generator allows you to run the sequencer to build sequences etc. even while tape is stopped, without having to switch the sequencer's clock reference from MIDI CLOCK to INTERNAL.

The time code reference chosen here is also used for CUES, AUTO REC points, PROGRAM CHANGES, and EVENT STORE modes.

15. MIDI CHASE key:

When MIDI CHASE is on, the MIDiiZER will send MIDI commands and clocks to its MIDI OUT jacks that cause a sequencer to synchronize (chase lock) to the SMPTE time code reference. This does for the MIDI sequencer what the CHASE key on the right hand side does for the slave transport: makes it go to the right position, and then move at the same rate of speed as the master. If you don't want the sequencer to follow when you're playing the tape, turn MIDI CHASE OFF.

Note that if no song (tempo map) has been recalled, no clocks can be issued and an "ERROR" message will be displayed on the LCD screen when you press MIDI CHASE.

16. MANUAL PLAY key:

This is a convenience feature which allows you to run the sequencer without having to change the sequencer's clock reference from MIDI CLOCK to INTERNAL and without using a TEMPO MAP. Basically it turns the MIDiiZER into an independent MIDI clock generator with its own tempo control that does not refer to time code, sending commands to the MIDI OUT jacks even when the rest of the system is idle.

17. T/C GEN key:

Pressing this key puts the MIDiiZER into SMPTE/EBU time code generator mode so you can record time code onto tapes. It will generate the type of code set by the DIP switch on rear panel (the type will also be shown in the main LCD screen), to the T/C GEN OUT connector on the rear panel. It will start generating code at 00 hours, 59 minutes, 30 seconds and 00 frames unless you specify another starting time.

NOTE: The MIDiiZER's time code generator does not jam sync nor regenerate time code.

18. OFFSET key:

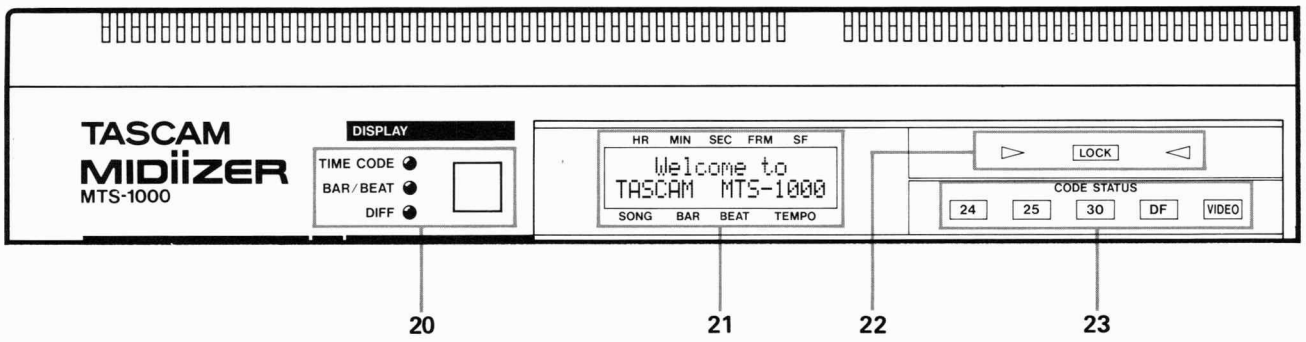
There are two kinds of offset in the MIDiiZER. Slave offset allows you to synchronize the slave transport to the master, but not at the same time code number (for example, the slave always 4 seconds and 2 frames behind the master). This difference is called the "offset", and it can be set down to 1/100 of a frame. MIDI offset allows you to advance or retard the MIDI start point so the sequencer leads or lags the recorded tracks (for example, so the sequencer "pushes" the beat by a few mill-seconds).

NOTE: MIDI TIME CODE (MTC) CONVERSION IS NOT AFFECTED BY OFFSET.

19. TEMPO INDICATOR:

When in MIDI CHASE or MANUAL PLAY mode, the tempo indicator will light at the speed specified, with the first beat of the measure always lighting the first LED. If the time signature has more than 8 beats, the display will "wraparound": for example, in 11/4 all 8 LEDs will flash in order, then the first 3 in order, then the first LED will start the sequence again.

Upper Section: Displays



20. DISPLAY MODE SELECT key and LED indicators:

This key is used to change what time you see in the LCD screen. You can see the TIME CODE of the selected transport by REF T/C key, the current BAR/BEAT, or the DIFFerence between the master and slave time codes.

21. LCD SCREEN:

Displays the time code location, bar/beat location, and various other messages or data depending on the mode. For more information, see "Understanding the LCD Screen" p. 19.

22. LOCK INDICATOR and arrows:

This shows the status of the slave in transport synchronization: if the left arrow is lit, the slave is within 2 frames but slowing down so the master can catch up to it. If the right arrow is lit the slave is within 2 frames but "catching up" to the master. If the LOCK light is on, the slave and master are synchronized within +/–0.3 frames.

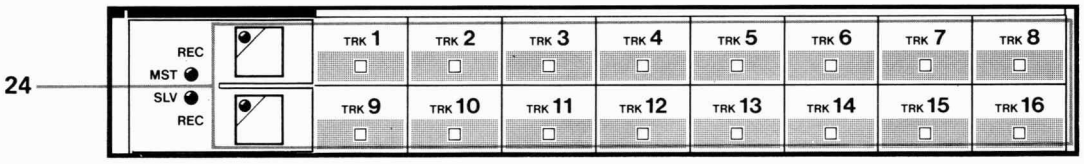
23. CODE STATUS DISPLAY:

These lights will light or blink to specify both the type of time code being read and to indicate errors in code reading. In transport CHASE mode:

1. when both master and slave are sending the same kind of time code, the lamp for the type of code will be on;
2. If only a master or slave is sending code, the LED will blink; if two transports are sending the different kinds of time code or if there is any error in time code reading (due to dropouts or noise on the line, etc.), the light also will blink.
3. If neither machine is sending code, the lamp is out.

VIDEO will light when the optional IF-1000 parallel interface unit is receiving a video sync signal.

Center Section: Matrix keys and indicators



At the center of the MIDiiZER are 40 squares, each with a named function and LED indicator lined up with 5 "row" keys on the left, and 8 "column" keys at the bottom. Each row of keys allows you to enter a certain type of function—press the desired row key, and then the column keys you wish to control.

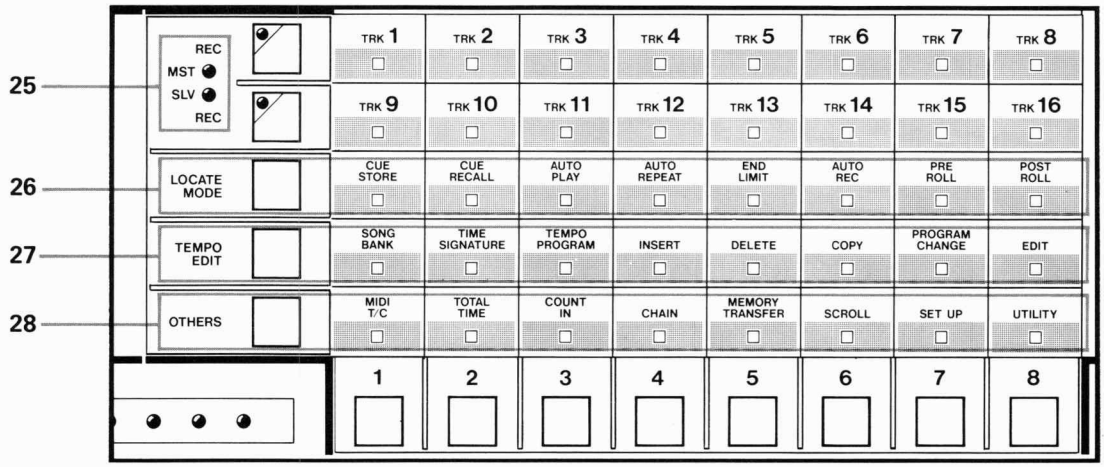
24. REC FUNCTION keys:

These allow you to have remote control of up to 16 tracks of REC function (track select) when the MIDiiZER is connected to a TASCAM multi-track recorder with a serial interface. When the top matrix key is pushed, the LED in the key lights and enables you to turn REC FUNCTION of tracks 1 – 8 on or off via the 8 (column) matrix keys beneath. Push the key under the track for "on" and its LED will blink indicating "rec ready" until master REC is pressed, when the LED will turn solid.

REC FUNCTION of tracks 9 – 16 can be turned on-off in the same manner when the second row matrix key is pressed. If the transport doesn't have these higher tracks, pushing the key has no effect.

NOTE: Tape transports without the TASCAM serial connector can not support this function.

If master and slave transports both are serial controlled, you can control the REC FUNCTION of each depending on the setting of the REMOTE SELECT key.



25. REC TRANSPORT INDICATORS:

The REC Transport indicator lights an LED to show which transport (master or slave) is selected for rec function remote. To change the transport use the REMOTE SELECT key.

26. LOCATE MODE key row:

The first five keys in the LOCATE MODE row have to do with the auto-locate functions of the MIDiiZER:

CUE STORE: Stores a time code number or a bar/beat location into one of 20 cue memories.

CUE RECALL: Recalls one of the 20 memories so you can send the transport to that point with the LOC key.

AUTO PLAY: Sets the transport to PLAY after every LOCATE.

AUTO REPEAT: For setting a play loop between two cue points, which will play over and over until you press STOP or turn off AUTO REPEAT.

END LIMIT: Sets points of the slave transport so that the slave tape can't accidentally run off either end of the reel.

The last three keys have to do with setting the cue points used in AUTO REC mode:

AUTO REC: Sets points for automatic record punch-in and out and allows you to select and execute the 3 modes of AUTO REC.

PRE ROLL: Sets the pre-roll time of an auto rec loop.

POST ROLL: Sets the post-roll time of an auto rec loop.

For more detail on these functions, see page 38.

27. TEMPO EDIT mode key row:

This row of keys have to do with the MIDI functions of the MIDiiZER – entering, recalling, and editing a tempo map, with program change commands entered into the MIDI data stream.

SONG BANK: Chooses among the 8 possible song memories and names them.

TIME SIGNATURE: Sets time signatures within a tempo map.

TEMPO PROGRAM: For building a song tempo map.

INSERT: For inserting changes into a tempo map.

DELETE: For deleting beats from a tempo map.

COPY: For copying sections of a tempo map.

PROGRAM CHANGE: Allows you to send MIDI Program Change commands directly from the MIDiiZER.

(PGM CHANGE) EDIT: Sets the time at which a MIDI program change message will be sent, what message it will be, and what MIDI channel it will be sent on.

For more detail on these functions see page 31.

28. OTHERS mode key row:

This row controls various other functions, both MIDI and transport related.

MIDI T/C: Turns MIDI time code conversion on or off. Leave it off if you don't have an MTC-capable sequencer.

TOTAL TIME: For displaying the total time of a song.

COUNT IN: For turning pre-start clicks (8 beats) on or off.

CHAIN: Allows you to chain a number of songs together.

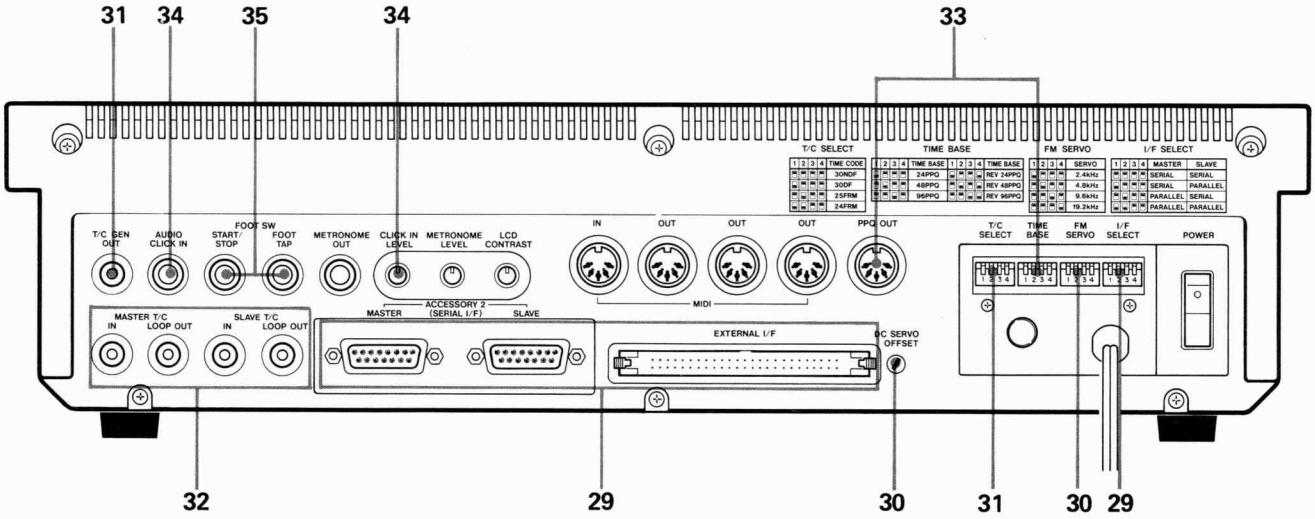
MEMORY TRANSFER: For saving and loading the tempo data of a song to/from a card or MIDI file.

SCROLL: To scroll quickly through a tempo map and other memories to examine their contents.

SET UP: Used when first connecting the MIDiiZER to tape transports, so it can "learn" and remember the transport control parameters.

UTILITY: The 7 utility functions listed on the front panel are available through this key:
Displays available Memory; Copies Songs;
Clears all Cues, Songs, program changes;
Allows manual changing of transport parameters; Event store.
For information on each, see page 43.

REAR PANEL



29. I/F Select and I/F Connectors:

The setting of these switches tells the what type of Master and Slave transport you have connected, serial or parallel control.

- Accessory 2 (Serial I/F) connectors are for TASCAM multi-track recorders with a serial interface.
- External I/F – connects to the optional IF-1000 for use with parallel control machines. Any parallel-interfaced machine, either master or slave, must be connected to the IF-1000.

30. FM Servo Select and DC Servo Offset Control:

The MIDiiZER judges the servo type of the slave recorder by being connected with interface cable.

FM Servo Select sets the reference frequency for the slave transport's capstan control. Check the manual for your slave deck to confirm its capstan frequency. The most common frequency is 9.6 kHz.

DC Servo Offset Control is a trim pot that is used to adjust the servo balance on the DC servoed slave deck (such as TASCAM 238) when it takes a lot of time to lock up to the master. It is factory preset to the best position, so DON'T TOUCH IT UNLESS YOU HAVE TROUBLE.

31. T/C Select and T/C GEN OUT:

Sets the SMPTE Time Code reference of the time code generator. You can confirm which kind of time-code is selected on LCD display in T/C GEN mode: the start time will be followed by:

NDF: 30 Non Drop Frame (SMPTE)
DF: 30 Drop Frame (SMPTE)
25F: 25 frame (EBU–European television standard)
24F: 24 frame (film standard)

32. MASTER T/C and SLAVE T/C IN and LOOP OUT:

Connect the output of the audio track carrying time code from the master machine to the MASTER T/C IN. This jack must receive SMPTE Time Code only, not a video or other audio signal. The SLAVE T/C IN should be connected the same way.

The LOOP OUT connectors are a "foldback" or Y-cord that allow the Master or Slave time code to be routed to other devices. For example, when striping time code on the machines the Master T/C Loop Out can be connected to the Slave unit's time code input.

33. TIME BASE Select and PPQ OUT:

The Time Base select sets the sync signal frequency for pre-MIDI products that used PPQ (Pulse Per Quarter Note) Synchronization. Check your owner's manual for the proper frequency and signal phase for your equipment. If no mention is made of phase in the manual try first with SW 4 OFF. If you have problems change SW 4 to ON.

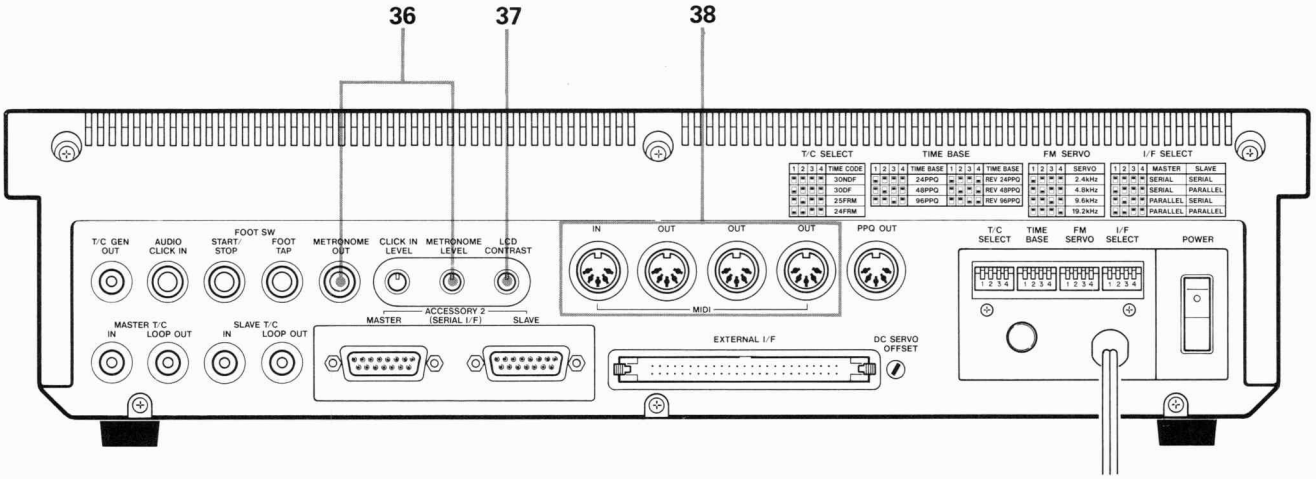
The PPQ OUT DIN connector may look like a MIDI connector but it only outputs PPQ sync and start signals. No MIDI signal comes from this connector: don't connect them!

34. CLICK IN LEVEL and AUDIO CLICK IN:

A tempo map can be created in the MIDiiZER by direct audio input. The Click In Level control adjusts the sensitivity of the Audio Click input connector to from –60 dBV/1 mV (microphone level) to –10 dBV/316 mV (line level). For more information, see TAP WRITE, page 28.

35. FOOT SWITCH JACKS:

Both START/STOP and FOOT TAP accept input from the optional TASCAM RC-30P footswitch. START/STOP is used in MANUAL PLAY MODE to control the sequencer; and FOOT TAP can be used the same way the TAP/MARK key is used on the front panel.



36. METRONOME OUTPUT and LEVEL CONTROL:

If you want to monitor the click signal from the MIDiiZER's metronome through a mixer or headphone amp, plug it in here. Doing so automatically disconnects the internal speaker. The METRONOME LEVEL control adjusts the output level of the jack or the internal speaker.

37. LCD CONTRAST:

This controls the contrast of the LCD screen. Rotate it to the position that makes the characters most visible.

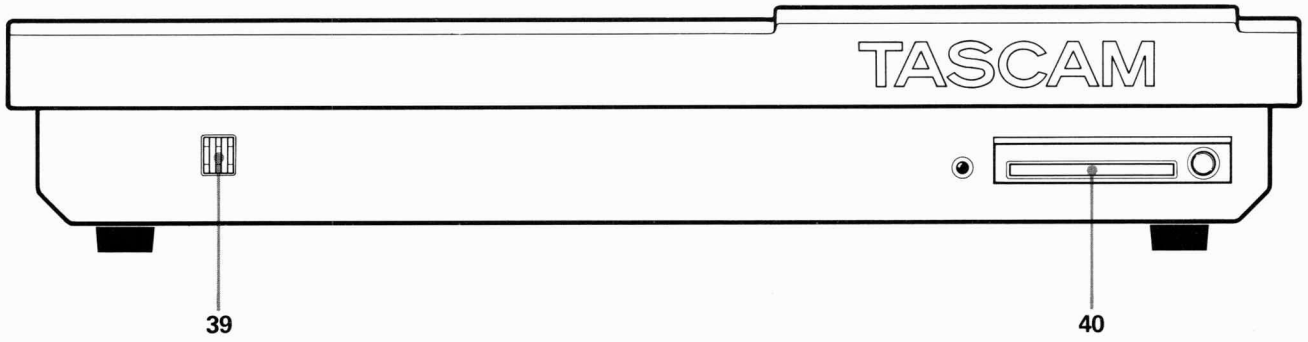
38. MIDI JACKS

The MIDI IN jack receives the MIDI clock from a MIDI sepuencer for building a tempo map.

The MIDI OUT jacks send out the MIDI clocks by MIDiiZER's tempo map and MIDI program change message.

The same information is output from these three MIDI OUT jacks.

FRONT PANEL



39. INTERNAL SPEAKER

40. MEMORY CARD SLOT

The optional CM-16 memory card is put into this slot. While the card is in, the LED will light in solid. To eject the card, push the bar on the right of the slot.

Understanding the LCD Screen

The MIDiiZER uses its LCD screen to:

- Show you the current time code location, of selected transport by the REF T/C key.
- Show the current tempo map location (bars/beats) and the tempo value of each beats.
- Guide you through various operating procedures.
- Indicate errors.
- Allow you to enter new time code locations or other parameters using the 10 key pad.

Here is a guided tour of what the display looks like in various modes; we will call them "screens".

Main Screen

This is the main screen of MIDiiZER—you'll see it most of the time when you are synchronizing. The top line shows you SMPTE time code from the transport selected by the REF T/C key—either the Master, Slave, or Internal generator.

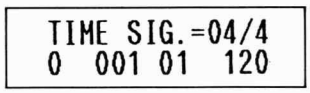
00 59 30 00 MST (or SLV or INT) = the master is at 0 hours, 59 minutes, 30 seconds, 00 frames.

During cue store, cue recall, auto rec, tempo program, program change, program change edit, scroll and event modes a new point can be entered on the screen using the numeric keys.

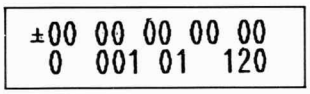
The bottom line of the main screen will show you what song, bar and beat you are at and the current tempo expressed in quarter notes per minute:

1 001 01 120 = song 1, bar 1, beat 1, tempo 120

You can change the main screen by pushing the DISPLAY key:



BAR/BEAT
shows the current time signature in a selected tempo map.



DIFF
shows the timecode difference between the master and the slave.

Entering Data into an LCD Screen

There are several ways parameters or variables may be changed in the LCD screen.

1. Choosing between several parameters
   When the MIDiiZER is offering you a choice between options, each option is given a number and a description on the screen. For example, in CUE STORE mode, the screen looks like this:

   A cursor is displayed under "1" in this case. Hitting ENTER with the cursor under "T/C" means that the cue will be stored according to time code. To choose option #2 or #3 instead, press 2 or 3 on the ten key pad. In either case, you advance to the next step by pressing ENTER.

2. Entering Values
   There are several screens in which you must enter a number. In the example below, you can move the cursor automatically by entering a number from the ten key. In other cases, you have to use the +/– key to move the cursor. It depends on which mode you are in.

   01-05-47-12-15
   (hours–minutes–seconds–frames–subs)

   In SONG NAME mode, use the rotary dial to scroll through the characters of the alphabet. When the character is correct, use the +/– key to move the cursor to the next position.

Getting Started: Transport Synchronization

Before you operate the MIDiiZER, it has to be connected to the transports and Time Code must be recorded onto the tapes. The MIDiiZER has to be Set-up or calibrated to match the particular transports you are using. The MIDI side of the system has to be hooked-up and some basic information entered for that side to function.

It may sound like you have to do a lot to get started. But, you only have to do most of it the first time; after you've mastered it once it becomes automatic. Be thorough and make sure you've gone through each step and tested it before going on to the next.

Step 1: How to Connect the Transports

There are several different kinds of transports that can be used with the MIDiiZER. Once you select your method of operation you are not likely to change it very often. It is important that you connect the equipment correctly and go through the basic set-ups before you attempt to operate the synchronizer functions of the system.

As examples, we have chosen 3 of the most common transport configurations. Read through the list, pick the one that most closely fits your equipment and follow that procedure:

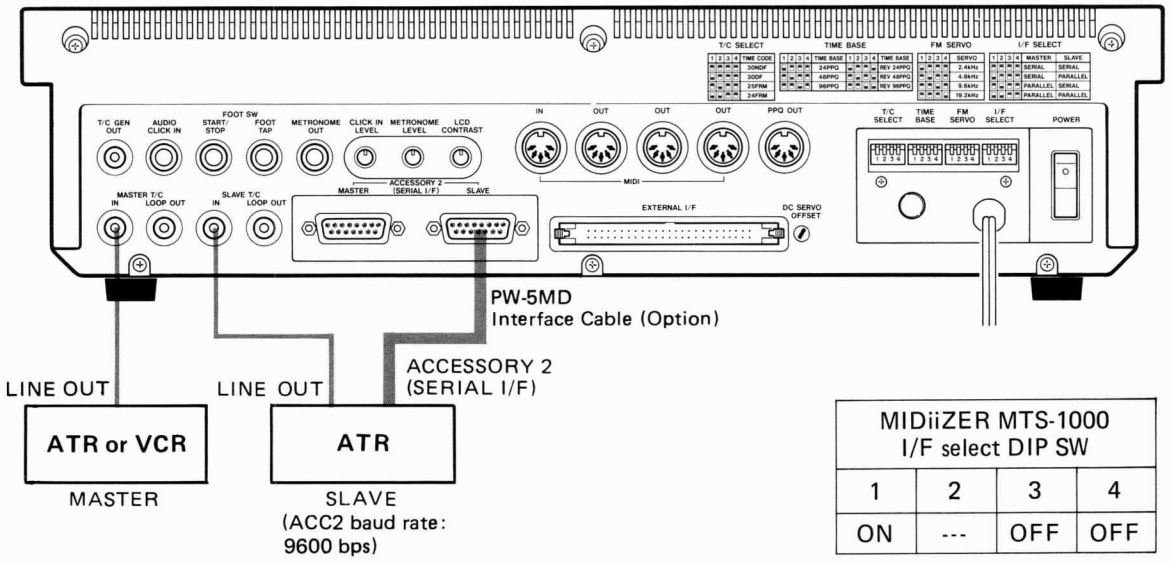
1. "Code Only Master" and Serial Slave.
2. 2 TASCAM Recorders with Serial Interfaces.
3. 1 or 2 Transports with Parallel interface.

These configurations are generic. They have been developed to give you an understanding of the differences in each.

[Example 1: "Code Only Master" and Serial Slave]

A "code only master" is one of the simplest ways to synchronize a TASCAM serial-controlled deck to a video tape recorder. In this case, the MIDiiZER cannot act as a remote control for the VCR – to get the system to move, you have to use the controls on the VCR itself. Also, since there are no tallies or tachometer coming from the master to the MIDiiZER, it has no way of knowing "where you're headed" when you put the VCR into a fast wind mode. So, to get the slave to locate, you have to put the VCR into PLAY for a second or two after it has rewound, so the MIDiiZER can read time code and figure out where to send the slave. As long as it's receiving time code from the master, the MIDiiZER will control the slave deck just as it does in a more complete full synchronization system.

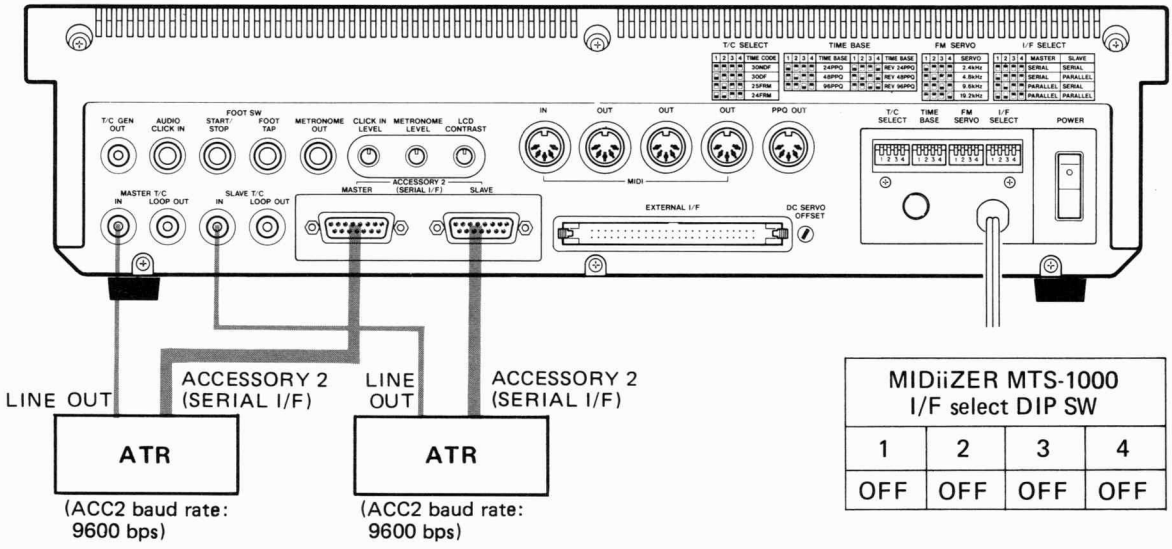
- Connect the audio output from the ATR or VCR that will be used for time code to the MASTER T/C IN of the MIDiiZER.
- Connect the audio output of the highest track of the multi-track TASCAM to the SLAVE T/C IN of the MIDiiZER.
- Using the optional PW-5MD cable, connect from the SLAVE D-SUB connector to the ACCESSORY SERIAL port of the TASCAM unit. Use a small screwdriver to tighten the screws on each side of the D-sub.
- On the rear panel of the MIDiiZER, set the I/F SELECT DIP switch for serial slave interface (it won't matter what the master interface is, since you aren't using it).
- In the manual for your slave transport, find the spec for "capstan servo frequency" – in most cases it will be 9.6 kHz. Set the FM SERVO DIP switch on the rear panel to match that frequency.
- Set the baud rate of the ACC2 connector of the recorder to 9,600 bps.



MIDiiZER MTS-1000 I/F select DIP SW			
1	2	3	4
ON	---	OFF	OFF

[Example 2: 2 TASCAM audio recorders with serial interfaces]

If you have 2 TASCAM multitracks with serial interfaces, they are connected as follows. It doesn't matter which you designate as the master, or which is the slave; just make sure that the slave time code comes from the same deck attached to the slave serial port.



MIDiiZER MTS-1000 I/F select DIP SW			
1	2	3	4
OFF	OFF	OFF	OFF

Make sure all units are powered OFF.

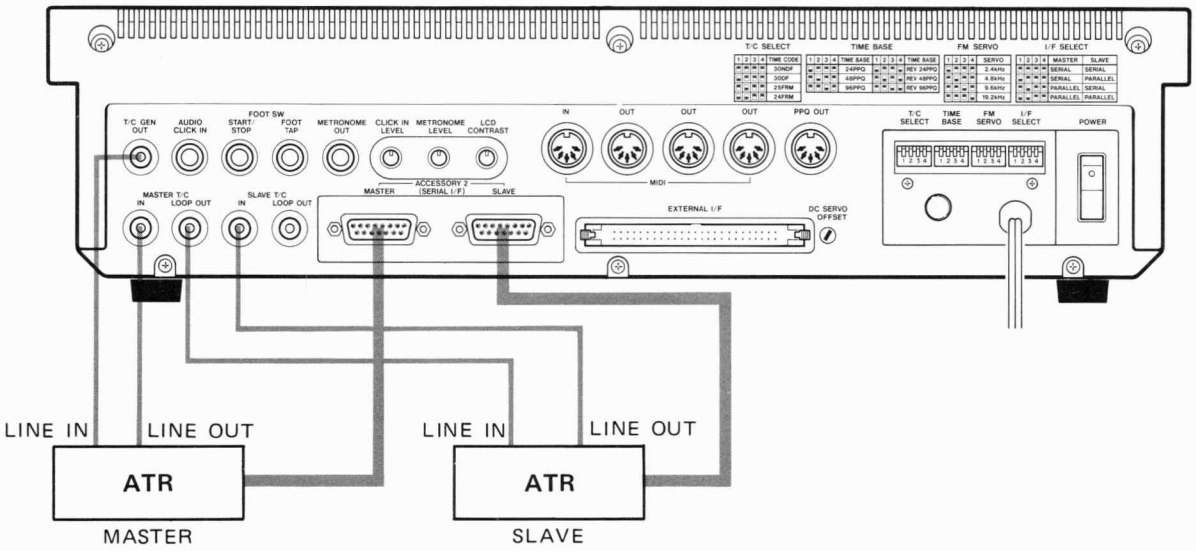
- Connect the audio output of the highest track of the slave to the SLAVE T/C IN of the MIDiiZER.
- Using an optional PW-5MD cable, connect from the SLAVE D-SUB connector to the ACCESSORY SERIAL port of the slave TASCAM unit. Use a small screwdriver to tighten the screws on each side of the D-sub.
- Make the same connections for the master deck.
- On the rear panel of the MIDiiZER set the I/F SELECT DIP switch for SER-SER operation, and make sure the FM SERVO DIP switch is set to match the servo frequency of the slave deck (in most cases, 9.6 kHz).
- Set the baud rate of the ACC2 connector of the recorder to 9,600 bps.

[Example 3: 1 or 2 Transports with parellel interface]

If you want to slave a multi-track to a VCR and have more convenient control of the VCR, or you want to synchronize a transport that does not have the TASCAM serial interface, you need to set the IF-1000 Parallel Interface Unit. It connects to the EXTERNAL I/F port on the back of the MIDiiZER, and converts the serial commands issued by the MIDiiZER into separate switch contacts used by many recorders. It is possible to mix serial and parallel transports in a system; the principles are the same: time code goes to the T/C IN jacks, and some kind of interface connection is made to each deck. For details and hookup charts, see page 46-48.

NOTE: Be sure to turn off the power to MIDiiZER whenever the DIP switch setting has been changed. The changed setting will be valid after the power is turned on again.

Step 2: Striping Time Code onto the tapes



Now that you have both master and slave connected and the transport controls are working from the MIDiiZER, the MIDiiZER has to "learn" the characteristics of the transports for smooth operation. First, you have to "stripe" the tapes—i.e., record time code on one track of the master and slave recorders (assuming that neither of your tapes have been pre-striped with code by someone else).

Connect the SMPTE Time Code Generator to the transports:

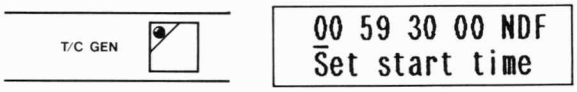
- Connect a cable from T/C GEN OUT on the back of the MIDiiZER to the input of the highest track of your master recorder.
- Connect the MASTER T/C LOOP OUT to the input of the highest track on the slave recorder. This will connect the T/C GEN to the slave as long as the master is switched to INPUT, or is in REC READY.

CAUTION: Connecting a Y-cord to the GEN OUT and sending time code signal to the master and slave simultaneously may cause timecode error.

- Set the type of time code you wish to use with the T/C SELECT DIP switch on the MIDiiZER's back panel. For most audio-to-audio applications, 30 NDF is used; 30 DF is used for most video applications, 25 FRM is used for European video, and 24 FRM for film.
- Check to be sure that both decks are in their internal or fixed speed mode. Some TASCAM serial-controlled transports will switch to External control mode automatically. You can leave it as it is.
- Put each deck into PLAY for about a minute of "leader".

Record time code:

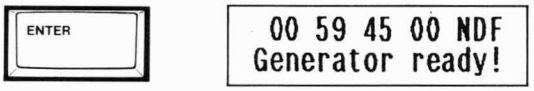
- Put the decks into REC READY.
- Press the T/C GEN key (#19), and the following screen will appear:



(NDF means 30 frame non-drop code)

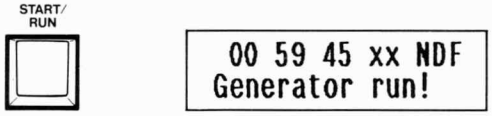
You may change the start time if desired, using the 10-key. We recommend that you always allow 30 seconds of time code before your program starts (that's why the default setting is 00 59 30 00).

- Press the ENTER key when you have the desired start time.

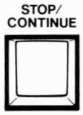


Will appear on the LCD.

- Adjust the input level (if available) of the time code tracks so that the level meters read between –5 and 0 dB.
- Hit RECORD and PLAY on both decks.
- Press START/RUN to generate time code.

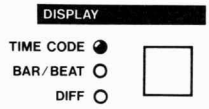


- After striping the entire length of the tapes, press STOP/CONTINUE to stop the T/C generation. Rewind the tapes to the beginning.



- Press ESC to leave this mode. Take the decks out of REC READY.

- To make sure that the time code was recorded, press the DISPLAY key until the T/C LED lights. Play the master recorder, and the slave. The time code on the LCD screen should advance; you can toggle the display between master and slave time code by the REF T/C key.



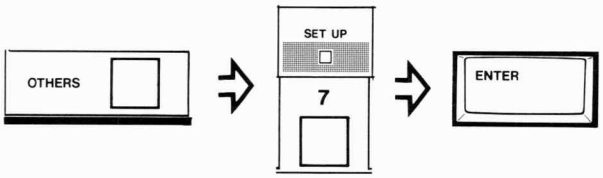
NOTE 1: The CODE STATUS light may not be showing the type of code you used in both generating and reading. This is because of the SET-UP is not yet performed.

NOTE 2: To perform synchronization, use the same time codes for the master and slave recorders and the built-in time code generator.

Step 3: Calibrate the MIDiiZER to the transports using SET UP

Before you start the automatic set-up sequence be sure to switch slave transports to External control mode. (Some TASCAM serial-controlled transports will do this automatically). For the master, set it to internal or fix speed mode.

- Press OTHERS, then select SET UP in the OTHERS row. Press ENTER to start the procedure. The MIDiiZER will send the transports into motion for a few minutes, stopping and starting them while it learns their characteristics. Do not interfere with this process while the "SET UP EXECUTING" message is on the LCD screen.



- At the end, it will automatically stop and display the "SET UP END" message. If all the connections have been made, and all the DIP switches are set properly, you are all set for synchronizing. Press ESC to leave SET UP mode.

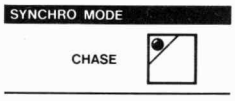
CAUTION: Do not touch any key while SET UP is being executed. This could interfere with the procedure and cause a mistake in learning the transport ballistics. If you do accidentally, go through this mode again from the start, and wait until "SET UP END" appears in the screen.

NOTE: If you use a TASCAM multi-track cassette recorder with an ACC2 connector, be sure to go through the SET UP procedure whenever the MIDiiZER's power or recorder's power is turned on or the tape is replaced.

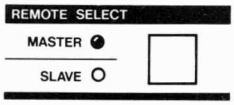
Step 4: Testing synchronization

Once "Set-up" is complete, the MIDiiZER can be used as a simple "chase and lock" synchronizer. Try this:

- Press the SYNCHRO MODE "CHASE" key.

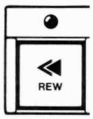


- Press the REMOTE SELECT key so the MASTER LED lights.



- Press PLAY on the MIDiiZER. The master and slave should both start, and in a short time the LOCK light will come on.

- Press REWIND. Both decks should take off.



- Press PLAY again. The slave may stop and fast wind a few times, but shortly it will go into PLAY and the LOCK light will come on. The two decks should basically behave as if they were a single machine with the slave following the master.

- Press STOP on the slave's transport controls. It may stop momentarily, but then will speed up again and catch up to the master as long as CHASE is on.

You may also wish to test if the REC FUNCTION switches work (if applicable).

IMPORTANT NOTES FOR "CODE-ONLY MASTER" SYNCHRONIZATION:

To synchronize the "code-only master" (see p. 20), keep the following remarks in mind:

1. The master recorder cannot be remote controlled by the MIDiiZER unless the ACC2 connector is used. Therefore, in SETUP, playback should be started with the master manually beforehand. Also operate it manually when synchronizing.
2. When an ordinary audio recorder is used as the master, the slave recorder will not follow the master while the master is performing locate, even if the slave is in the chase mode. When locate has finished, start playback to read the time code so that the slave starts chasing. When a professional VCR, etc. is used, refer to page 48.

Getting Started: MIDI Synchronization

Step 1: Hooking up the MIDI devices

The following hookups are basic ones intended to show how the MIDiiZER connects with a system. The possibilities of a MIDI system are almost endless—your system may have MIDI thru boxes and patch bays, and many more MIDI devices than we show here. But reading this through and taking things one step at a time will help you with your setup, whatever it may be.

Example 1: Hooking up one sequencer

The most basic MIDiiZER MIDI connection is to simply:

- Connect any MIDI OUT of the MIDiiZER to the MIDI IN of your sequencer.
- Connect the MIDI OUTs of the sequencer to the MIDI INs of the synthesizers.

Some sequencers may have two MIDI INs; check the owner's manual to find out which is the better connection to receive MIDI CLOCK and other System Real Time messages. Some MIDI computer interfaces have two sections, one for the modem port and one for the printer port, and some software works better if one of the ports is used exclusively for timing information. Once the connection is made you must tell the sequencer to follow MIDI clocks instead of its own internal clock—again, check the sequencer manual for this procedure.

Connection for building a Tempo Map from MIDI

If you want to use MIDI clocks from the sequencer to build the tempo map in the MIDiiZER, you must connect a MIDI cable from the sequencer OUT in the MIDiiZER's MIDI IN. After the map is built, you can repatch the master keyboard to the IN if desired.

NOTE: This connection isn't necessary for any of the other tempo map program modes such as TAP, STEP or MANUAL. See page 29.

Example 2: Hooking up 2 sequencers and an effects device

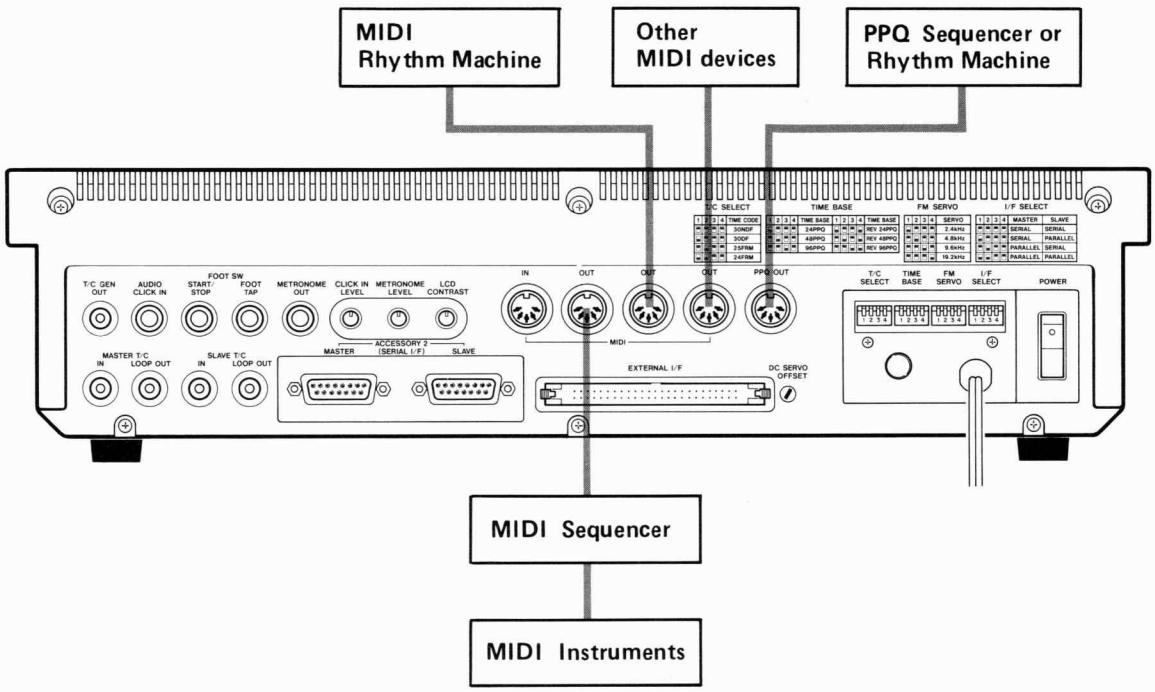
If you have two sequencers (most typically, a keyboard sequencer and a rhythm machine), the best connection is to connect the MIDI OUTs of the MIDiiZER to the MIDI IN of each separately:

By connecting one of the MIDI OUTs of the MIDiiZER to the MIDI IN of an effects device, you will be able to use the PROGRAM CHANGE feature of the MIDiiZER to change patches on the effects device at precise SMPTE time code cues. You still have to hook up the signal to the effects device in the usual way—the MIDiiZER acts only as an "invisible hand" changing the presets for you.

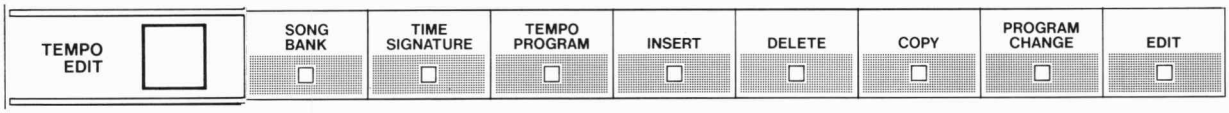
Example 3: Hooking up pre-MIDI sequencers

Older sequencers used square wave (pulses per quarter note) signals for timing. The PPQ output of the MIDiiZER is intended for these units. The TIME BASE DIP switch sets whether this jack puts out 24, 48, or 96 PPQ signals, and the phase of the signal.

All these parameters must be set properly for your unit. Check the owner's manual for your sequencer to find these specifications. See Appendix for information on cabling details—you may have to make a custom cable for your unit.



TEMPO EDIT (Matrix switches Row 4)



The fourth row of functions on the center of the MIDiiZER control the synchronization of a MIDI sequencer to SMPTE time code. All by itself, SMPTE has nothing to do with musical notation; you must build a "tempo map" in the MIDiiZER's memory that correlates SMPTE time to bars and beats in the music.

Understanding Tempo Maps: the "Conductor" analogy

Imagine the conductor of an orchestra. In front of him on the podium is the musical score—it has measure numbers, and the musical notation indicating what notes should be played during each bar. Behind the orchestra is a clock on the wall. Next to the score is a set of timing instructions for the evening that says "Begin promptly at 8:01 PM at a tempo of 60 beats per minute". The conductor and orchestra wait patiently and as the clock on the wall reaches 8:00:59 the conductor raises his baton and the entire orchestra hits their first quarter note at 8:01:00 precisely, advancing a beat every second. This conductor keeps one eye on the clock, and another on the piece of paper with the timing instructions, which say. "At 8:01:40 (which is 10 bars of 4/4 into the song), increase the tempo to 90 beats per second". When the clock reaches 8:01:40, he speeds up the orchestra.

To draw an analogy, the piece of paper with timing instructions is the tempo map you build in the MIDiiZER, the clock on the wall is the SMPTE time code received from tape or the internal generator, the musical score is the sequence you've written into the sequencer, the conductor's baton is the MIDI clocks and START commands issued down the MIDI line from the MIDiiZER to the sequencer, and the orchestra is the MIDI instruments. If you rewind, locate or stop the tape, the MIDiiZER will issue Song Position Pointer commands to the sequencer that tell it where to go in the song, much like a conductor in rehearsal tells the orchestra to start again from a certain measure of the score.

To stretch our analogy to show how SMPTE-to-MIDI synchronization works, if the conductor sees the clock on the wall suddenly go backward, he tells the orchestra to stop. Once the clock starts up again (say at 8:01:30) he tells the orchestra, "Turn your music to bar 8 (or 32 quarter notes into the song) and get ready to play on my cue." Notice he gives the musicians a few moments to find their place again, and when the clock says 8:01:32 he raises his baton and they all come in on cue.

The Tempo Edit functions of the MIDiiZER allow you to write the tempo map that the "conductor" uses. You name and number the song (after all, there might be various works for the orchestra that eveing), make a list what time signature starts where (because musicians are used to thinking in measures, and it's faster than counting how many individual quarter notes have passed from the start of the song) and build the beat map in one of four different methods. With insert, delete, and copy functions, you can change the tempo map after you've entered it.

HOW TO BUILD A TEMPO MAP IN THE MIDiiZER (SONG BANK)

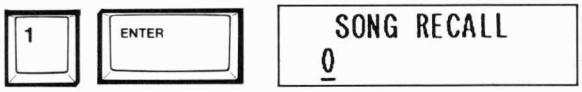
Step 1: Select the song

Before anything else, you have to "get out the piece of paper and name it":

- Press TEMPO EDIT (Row 4 Key). The row will blink.

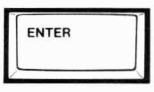
- Press Column 1 key (SONG BANK). The first screen is:

- Press 1 and ENTER.

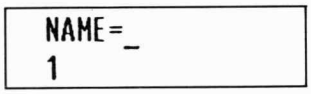


- Press a number between 1 and 8 and press ENTER. Up to 8 songs (1 – 8) can be stored in the MIDiiZER. Once you've chosen the song memory on which you will build your map this screen appears:

- Press ENTER to go back to the main screen. Or, press TEMPO EDIT row key.



To name a song, press 2 and ENTER on the first screen of SONG BANK after you recall the song.



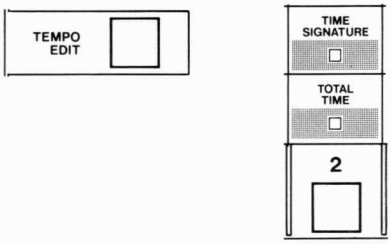
- Use the rotary dial to scroll though the alphabet until you get the first letter of the song name you want. Press + to advance to the next letter, and do it again for each character, up to 8 letters. If you make a mistake, you can move the cursor backwards by pressing SHIFT and +, simultaneously.

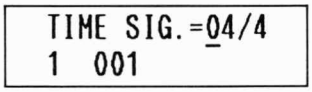
- Press ENTER when you have the name you want, and you'll go back to the main screen. Or, press TEMPO EDIT.

Step 2: Enter the Time Signature

You must enter time signatures as the first step of building a tempo map. If you change meter during your sequence—for example 6/8 during the chorus and 4/4 during the verses—you must change it in the MIDiiZER as well to make the bars/beat display of the MIDiiZER match the display of your sequencer. Note that if you don't, the sequencer will still locate to the correct point, because in MIDI there are no bar informations: Song Position Pointer counts how many sixteenth notes have passed from the start of the song.

- Press TIME SIGNATURE (TEMPO EDIT row, col. 2). The screen looks like this:

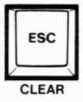




The message of this screen is that the time signature is 4/4 in Song 1, at beat 1.

- To change the time signature, enter the numbers on the ten keypad. You can toggle the cursor between numerator and denominator by using + key and SHIFT key. Enter the number between 01 and 15 for numerator, 4 or 8 for denominator. Or you can move the cursor to the bar number by using + key to changing time signature at any bar you want.

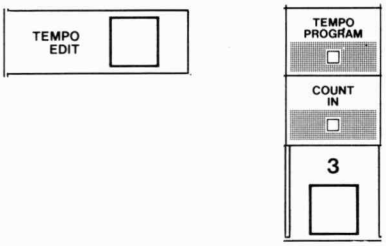
- Press ENTER to advance to the next bar. Change the setting of each bar in turn.
- When you are finished setting the time signatures, press ESC. Note that you can't change signatures in the middle of a bar—if you want half a bar of 4/4, it's written as a bar of 2/4.



Step 3: Build the Tempo Map (TEMPO PROGRAM MODE)

The MIDiiZER offers you four different ways to program the tempo map into internal memory. Each is suited to a different way of working, but each one has the same result: in the MIDiiZER's SONG memory, every quarter note of a song has a tempo (in beats per minute) assigned to it. In association with the SMPTE start time, this tempo map gives the MIDiiZER all the information it needs to send the proper MIDI Song Position Pointer and Clock commands to the sequencer.

- After you have selected the song and entered the first time signature, press TEMPO PROGRAM (TEMPO EDIT row, column 3). The first PROGRAM screen asks you which method of programming you want:



- Choose the method you want with the 10-key pad and press ENTER. Here are descriptions of the four different choices:

[**Method 1–STEP WRITE**] This method is closest to the way data is actually stored in the MIDiiZER. Every beat (or step) has a tempo marking, and you can enter the data you want for each. It allows you to build a tempo map in fine detail according to your ideas:

- On the TEMPO PGM screen, press 1 ("STEP") and ENTER.

```
STEP WRITE
1  001 01  120
```

This screen is telling you, "In Song 1, Bar 1, Beat 1, the tempo is set to 120 beats per minute."

- To enter the desired tempo, use the ten key. When you hit ENTER it will advance to the next beat and the next note will automatically have the same tempo as the one before it, unless you change it. In this method, you have to press ENTER for every note of the song. This is the slowest, but most detailed method of entry.

[**Method 2–TAP WRITE**] This method allows you to "play" a tempo map into the MIDiiZER by hitting the TAP key with your hand (each TAP marking a beat, from 20 to 250 beats per minute), hitting a footswitch with your foot or even by input from an audio track (of a metronome click, or cowbell or claves etc.). TAP entry has the advantage of being able to sync MIDI instruments to a more human, varying feel. Each note you TAP is recorded on the tempo map referenced to the current time code; with this method it is possible to add MIDI tracks to a tape that was recorded "live", as long as one track of the tape has time code on it.

NOTE: The last tap or click is used as the end trigger, so the interval between the one before and the last tap or click will be stored as the tempo of the last beat. Also, the time code value at the first tap will be stored as MIDI start time for this song automatically.

NOTES for using AUDIO CLICK

1. If you want to use an audio click track for tapping, connect the click source to the AUDIO CLICK IN on the MIDiiZER.
2. Play the click source and adjust the CLICK IN LEVEL pot on the rear panel until you see the TAP/MARK LED flashing to the beat.

- On the TEMPO PGM screen, press 2 ("TAP") and ENTER.

```
TAP  WRITE
1TAPKEY 2A.CLICK
```

- Press 1 and ENTER to use the TAP/MARK key or footswitch, or 2 and ENTER to use the AUDIO CLICK method.

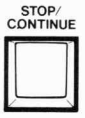
```
TAP KEY WRITE
1  001 01  120
```

- Play the time code source (Master, Slave, or Internal can be chosen using the T/C REF key).
- Hit the TAP/MARK key or footswitch to start and on the first and every beat of the song.

```
A.CLICK WRITE
1  001 01  120
```

- Play the time code source (Master, Slave, or Internal can be chosen using the T/C REF key).
- Start playing the click source, and it will automatically start the building of the beat map on the MIDiiZER.

With either method, once the song is finished press the STOP/CONTINUE key.




```
TAP KEY   END
1  080 01  114
```

```
A.CLICK   END
1  080 03  114
```

NOTE 1: If you chose INTERNAL as your T/C reference, you can build the tempo map and record time code onto the tape simultaneously.

NOTE 2: The MIDiiZER will not send MIDI clocks from MIDI OUT jacks while you're writing tempo by TAP.

[**Method 3–MANUAL WRITE**] This method allows you to set a starting tempo, and then use the rotary dial to increase or decrease tempo as you listen to the sequence. It is probably the easiest method of entry.

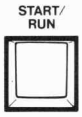
- On the first TEMPO PGM screen, press 3 ("MANU") and ENTER:

```
MANUAL TEMPO
1  001 01  120
```

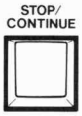
- Use the rotary dial to set the starting tempo.

- Press PLAY on the master or slave deck if they are chosen as the MIDI MODE REF T/C reference.

- At the point on the tape you want the tempo map to begin, press the START/RUN key on the MIDiiZER. Every beat will be written with the starting tempo until you move the rotary dial. You can move the dial continuously during the song, and the MIDiiZER will record each tempo; you will see the tempo on the last three digits of the bottom line of the display, and the beat LEDs of the tempo indicator will flash in time.



- At the end of the song, press the STOP/CONTINUE key.




```
MANUAL   END
1  100 01  130
```

[**Method 4—MIDI EXTERNAL**] If your sequencer has its own "conductor track", or its own method of changing tempos within a song, you may want to copy the moves from the sequencer into the MIDiiZER's beat map. This involves taking the MIDI OUT of the sequencer (which should have "MIDI CLOCK OUT" enabled) and plugging it into the MIDI IN of the MIDiiZER. It's sort of the MIDI-to-MIDI version of TAP entry—the sequencer does the tapping digitally, at the clock rate of 24 clocks per quarter note.

- Plug the MIDI OUT of the sequencer to the MIDI IN of the MIDiiZER.
- On the TEMPO PGM screen, press 4 ("MIDI") and ENTER.

```
EXT MIDI TEMPO
1  001 01  120
```

- Press PLAY on the master or slave deck if they are chosen as the MIDI MODE REF T/C reference.
- At the point on the tape you want the tempo map to begin, press the START/RUN key on your sequencer. It will automatically start the building of the beat map on the MIDiiZER. Via MIDI clocks, the tempo map will be "played" into the MIDiiZER.
- When you press STOP on the sequencer, the MIDiiZER will record that as the end of the tempo map.

```
EXT MIDI   END
1  120 03  114
```

NOTE 1: Time signature changes are not transmitted over MIDI. If there are time signature changes in the sequence, use TIME SIG. mode to enter the changes so the bar/beat displays of the MIDiiZER and sequencer match. Other than the difference in display, there are no other side effects, so you can skip the TIME SIG. edit if desired.

NOTE 2: The MIDiiZER will not send MIDI clocks from MIDI OUT jacks while you're in this procedure.

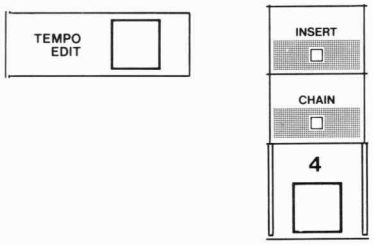
HOW TO MAKE CHANGES TO AN EXISTING TEMPO MAP

Once you have built a tempo map, you may want to change some things about it. If you used TAP ENTRY, perhaps a few notes were a little off, or you accidentally hit "double time" on a few beats. If you used a manual or MIDI entry, perhaps you want to add some random variations to "humanize" the beat. In any case, please remember: Edit the tempo map before you progress to doing overdubs onto the multitrack that are based on the sequencer tracks.

In the TEMPO EDIT row, there are 3 keys that concern editing an existing tempo map: INSERT, which allows you to insert tempo changes on a beat, DELETE, which allows you to delete a beat entirely, and COPY; which allows you to copy and paste sections of a tempo map together.

[**To change the tempo of a beat: INSERT mode**]

- Press INSERT (TEMPO EDIT row, column 4):




```
INSERT
1  001 01  120
```

- Go to the beat you want to change. Enter the bar number with the ten key and press ENTER. Enter the beat number on the ten key, and press ENTER. Then the cursor will jump to the tempo number for you to change it.

```
INSERT
1  093 02  122
```

- Input the tempo via the keypad and press ENTER.

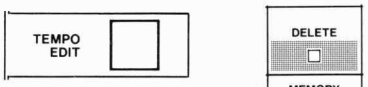
```
INSERT  EXECUTE
1yes  2no
```

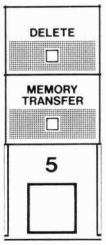
- Choose yes or no using the keypad or cursor and press ENTER. If you press 1 for YES, it will change the memory and advance to the next note; if you press 2 for NO, it will return to the ENTER TEMPO screen.
- When you are finished making changes, press ESCape to leave the INSERT mode.

Note that when you INSERT a tempo change, it is ONLY for that beat, not for the beats following. If you want to speed up a whole section, you'll have to INSERT each beat, or use the COPY function below.

[How to delete data from a tempo map: TEMPO DELETE MODE]

If there's a place where you entered an extra note and you want to delete it, use TEMPO DELETE (the 5th key on the Tempo Edit row):





- Go to the beat you want to delete. Enter the bar number with the ten key and press ENTER. Enter the beat number on the ten key, and press ENTER.

This is asking you if you want to delete the tempo at the point you just chose.

- Press ENTER while the cursor is under 1 (yes) to delete the beat. All the data following it will move up one beat (what used to be beat 3 will now be beat 2, etc.)
- Press ENTER while the cursor is under 2 (no) if you don't want to delete the beat.

In either case, it will return you to the first delete screen, where you can delete more beats.

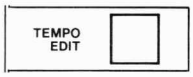
- When you are finished deleting data, press ESCape to get out of this mode.

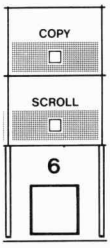
TIP: If you want to delete a number of beats in a row, note that as far as the DELETE display is concerned, each beat becomes the same number since the whole tempo map moves up one beat each time you delete. For example, to delete bars 9 and 10 of an existing tempo map, you would delete bar 009 beat 01 eight times. So don't delete bar 009 beat 02, etc.

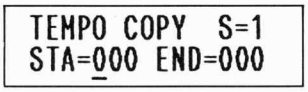
[How to copy and paste sections of a map: TEMPO COPY MODE]

This mode is used if you have a few bars, or a section, of tempo map that you wish to repeat at another place in the same song. It can also be a powerful tool for quickly building a tempo map instead of entering each section independently.

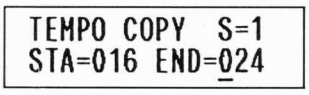
- Press COPY (TEMPO EDIT row, 6th coloumn key):



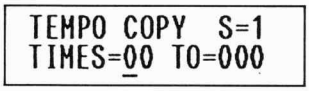




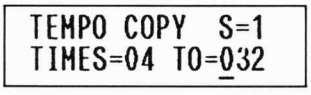
This screen is asking what bars you want to copy in Song 1. "STA" is the starting bar that will be copied. "END" is the last bar that will be copied. For example, to copy from Bar 16, beat 1, through Bar 24, beat 4:



- Enter the STArt bar you want to copy and press ENTER. The cursor will advance to the END number.
- Enter the END bar of the section you want to copy and press ENTER. This screen will appear.



This screen is asking you how many copies (times) you want to "paste" the copied measures into the song and where (to = after which bar).



- Enter the number of times and press ENTER.
- Enter the bar you want the copy to be pasted (after) and press ENTER.

In the above example, the tempo map from 016 – 024 will be pasted 4 times after bar 32, covering the data from bar 33 to 96.

The screen finally says,

```
TEMPO COPY  S=1
 1yes  2no
```

- Press 1 for yes or 2 for no and press ENTER.

Making either choice will return you to the TEMPO COPY screen so you can make more copies.

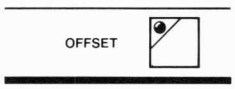
- Press ESCape to leave this mode.

NOTE: You cannot copy tempo data to the point before or on the section which will be copied, or from one song to another.

How to offset MIDI tracks relative to the tape

You can shift MIDI tracks in time so that the sequencer "leads or lags" the beat, using the OFFSET feature.

- Press OFFSET.




```
OFFSET MODE
1TRANSPORT 2MIDI
```

This screen asks you whether you want to offset the slave transport, or to set the MIDI start time.

- Press 2, and ENTER:

```
set song number
             S=1
```

- Currently recalled song number will be shown above the cursor. Enter the song number (1 – 8) and press ENTER.

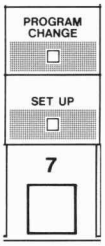
```
00 00 00 00 00
MIDI START TIME
```

- This screen shows the MIDI start time you have set if there is. Enter the desired time code points with the 10-key and press ENTER.

```
01 00 00 00 00
 1set 2cancel
```

- Make your choice and press ENTER.

How to generate Program Change Messages from the MIDiiZER: PROGRAM CHANGE MODE



The MIDiiZER can issue MIDI Program Change commands at specific SMPTE points. These Program Changes can change patches on synthesizers and effects devices, or move from snapshot-to-snapshot on automated mixing consoles. The MIDiiZER can store up to 99 program change points.

- Press PROGRAM CHANGE (TEMPO EDIT row, column 7). The first screen is:

```
PGM CHG 1ON 2OFF
ALL CH=** NO=***
```

The top line of this screen allows you to turn the Program Change (PC) transmission by the MIDiiZER on and off. The cursor is showing the current status. Note that this will not effect Program Change messages sent from an external sequencer into MIDiiZER.

- To switch PC transmission on or off, use the ten key then cursor will move. And press ENTER.

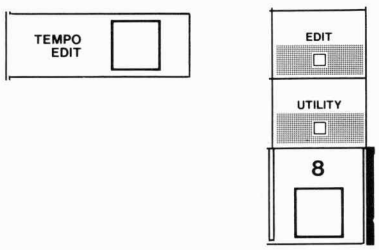
The bottom line of the screen shows you:
a) which all or one of the 99 PC memory locations in the MIDiiZER you're seeing;
b) which of 16 MIDI channels it will be transmitted on;
c) the PC message (000 – 127) that will be sent.

- Use the Rotary Dial to scroll through the 99 PC memory locations if you wish to see them without editing.
- To leave this mode, press ESC or TEMPO EDIT key.

How to edit the Program Changes: EDIT MODE

This feature allows you to set or edit the contents of any of the 99 MIDI Program Change messages.

- Press EDIT (TEMPO EDIT row, column 8).




```
PGM CHG EDIT
1NUMBER 2POINT
```

This screen is asking you what you want to edit: the message and channel (number), or the SMPTE time it will be sent (point).

- Pressing 1 and ENTER brings you to:

```
PGM CHG NUMBER
00 CH=00 NO=000
```

- Enter the cue number you want to edit and press ENTER.
- Enter the MIDI channel number you want it to be transmitted on and press ENTER.
- Enter the Program Change message you want to send.

Note that program change numbers may vary from device to device; for example, sending a MIDI program change number of "033" may be interpreted as "Patch C-1" on one synthesizer, "Cartridge voice 1" on another, or "32" on another.

- Press ENTER, to return to the beginning screen so you can edit the time code location, or press ESCape to leave PC EDIT mode.

If you return to the first screen:

```
PGM CHG EDIT
1NUMBER 2POINT
```

- Pressing 2 and ENTER brings you to:

```
PGM CHG POINT
1T/C 2BAR 3MRK
```

This screen allows you to choose what method you want to use to mark the point where the program change takes place.

[**Method 1—T/C**] This method will transmit a Program Change whenever a specific time code number is read, whether or not a tempo map yet exists.

- From the PGM CHG POINT screen, press 1 and ENTER:

```
00 00 00 00
PGM CHG POINT
```

- Enter a time code number by using the 10-key, and press ENTER.

```
01 00 00 00
PROGRAM NO.=00
```

- This screen is asking you which of the 99 PC memories you want to assign this time code point to. Entering the number (01 – 99) and pressing the ENTER key brings you to:

```
PROGRAM CHG EDIT
 1yes  2no
```

- Make your choice and press ENTER.

[**Method 2—Bar/Beat**] You must have already built a tempo map and have recalled a SONG BANK to use this method (see p. 59).

- From the PGM CHG POINT screen, press 2 ("BAR") and ENTER:

```
PGM CHG POINT
1  000 00
```

- Enter the BAR using the ten key and press ENTER.
- Then enter the BEAT with the 10-key and press ENTER again.

```
PROGRAM NO.=00
1  001 01
```

Now you can choose which program change you want to send at the musical point you just chose. Entering the number (01 – 99) and pressing the ENTER key brings you to;

```
PROGRAM CHG EDIT
 1yes. 2no
```

- Make your choice and press ENTER.

[**Method 3—Mark**] This allows you to mark a SMPTE time code point "on the fly" as you're listening to a track.

- From the PGM CHG POINT screen press 2 ("BAR") and ENTER:

```
00 00 00 00
PGM CHG POINT
```

- Make sure you're using the reference time code you want by pressing the REF T/C key if necessary.
- Press PLAY, starting the tape on the selected deck. (If you're using the INTernal generator as reference, press START/RUN).
- Hit the MARK key at the point where you want the Program Change to be transmitted. Then press ENTER:

```
01 02 30 10
PROGRAM NO.=00
```

Now you can choose which program change you want to send at the point being set before.

- Entering the number (01 – 99) and pressing ENTER brings you to:

```
PROGRAM CHG EDIT
1yes  2no
```

- Make your choice and press ENTER.

To leave PC EDIT mode entirely, press ESCape.

Important notes about Program Change

"Missing" PCs: If you LOCate, fast forward, or rewind the tape to another point, the MIDiiZER will not transmit the patch changes that would have been missed from the last time it was in PLAY mode. This means your equipment may not be at the patch change you expect unless you PLAY from the beginning of a song.

MANUAL PLAY

In the MANUAL PLAY mode, as an arbitrary clock signal is output regardless of the tempo map, synchronization is made possible with a MIDI or PPQ sequencer which does not use the time code signal. The following shows an operation example using MIDI instruments, but the operation will be the same with PPQ-sync instruments.

[**MANUAL PLAY**]

1. Switch over the clock for an external MIDI instrument connected to MIDI OUT of the MIDiiZER from INTernal clock to the MIDI or EXTernal clock.
2. Press MANUAL PLAY key. The display will show the following:

```
MANUAL  PLAY
1  001 01  120
```

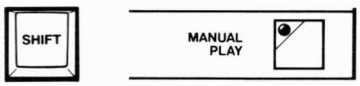
3. Turn the rotary dial to change the tempo on the display.
4. Press START/RUN key; the MIDI instrument will start with the tempo set by the rotary dial. This is because the MIDI instrument is synchronized with the MIDiiZER's internal clock; you can change the tempo by turning the rotary dial at any time during play.
5. To stop, press STOP/CONTINUE key, and to restart from the same point, press STOP/CONTINUE again.
6. To exit from the MANUAL PLAY mode, press the MANUAL PLAY key again; the main screen will be restored.

NOTE: With CHASE or PHASE SYNC activated, entering this mode will release the transport's synchronization and the slave machine will stop automatically. Note that, during MANUAL PLAY, CHASE will not be accepted (the CHASE mode will be released immediately after turning ON the CHASE key).

[**Changing Time Signature in MANUAL PLAY**]

The time signature for the MANUAL PLAY can be changed; it is factory set to 4/4.

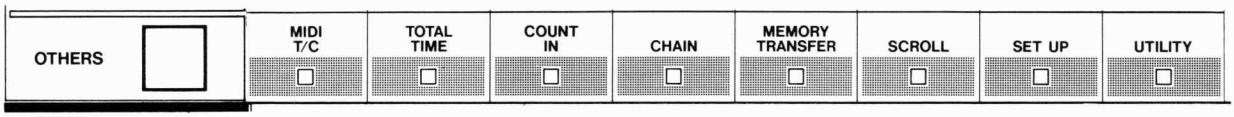
1. While pressing the SHIFT key, press the MANUAL PLAY key. The display will show:




```
MANUAL  PLAY
TIME SIG.=04/4
```

2. Enter the numerator then the denominator using the ten keypad. Time signatures from 01/4 to 15/4 or from 01/8 to 15/8 can be set.
3. After entering, press ENTER to return to the main screen.

OTHER MIDI FUNCTION (Bottom row of matrix switches)

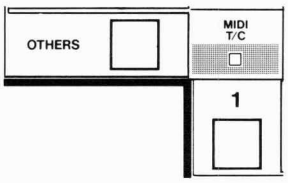


The fifth row of functions on the MIDiiZER switch matrix controls other MIDI features and "housekeeping" tasks.

1. MIDI T/C

MIDI Time Code is not a separate type of time code but a way of translating SMPTE time code frame numbers down a MIDI buss. There are some sequencers that are event oriented instead of musically oriented—for example, in film work a gunshot should sound at a certain frame number, regardless of the music. Computer programs designed to serve this purpose can read MIDI time code, or MTC, and use it to sequence such cues.

The MIDiiZER has the ability to translate incoming SMPTE T/C from master or slave to MTC.
Press MIDI T/C (OTHERS row, first column switch):




```
MIDI TIME CODE
1yes 2no
```

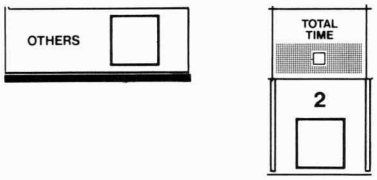
You can use the 10-key to switch MTC conversion on or off, and press ENTER. MIDI T/C LED will stay lit while it is ON.

NOTE: When MIDI T/C is ON, MIDI CHASE is defeated. You cannot send both MIDI TIME CODE and MIDI clocks at a time. So when you press MIDI CHASE key while MIDI T/C is ON, MIDI T/C will automatically turn off.

Also, while MIDI T/C is ON, be careful not to change the setting of the REF T/C key.

2. TOTAL TIME

Using this feature, you can see the total time of a sequence.




```
S=1
TOTAL TIME
```

This screen is asking you which song you want to check the total time. Choose a Song No. and press ENTER:

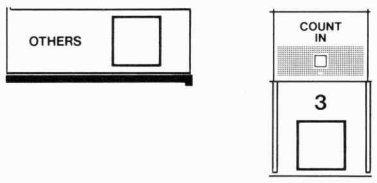
```
05 07 06
TOTAL TIME
```

This is the total time in minutes, seconds, and frames of the song's tempo map, from START to STOP.

- Press ESC or "OTHERS" matrix key to leave this mode.

3. COUNT-IN

This feature can be used only in MIDI CHASE mode. Basically, it gives you 8 beats "for free" as a count-in before the "real" first measure (start point). The COUNT-IN is at the same tempo used for the first beat of the song, and at the time signature 4/4. The Tempo indicator will flash, showing you which beat you're on and you will hear the click from either the internal speaker or the metronome out.

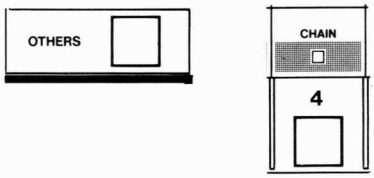



```
COUNT IN
1yes 2no
```

- Turn the feature on or off with the number key and press ENTER. If you set it on, the COUNT IN LED will stay lit.

4. CHAIN

This allows you to take different songs and put them in a chain of songs. Up to 8 songs can be chained. For example, you can play songs continuously with time code source running in live performing. All you have to is edit the MIDI start time of each songs, MIDiiZER will send song select message for the next setting to a sequencer when one song is ended.




```
CHAIN MODE
0-0-0-0-0-0-0-0
```

- You can input up to 8 song numbers which has the programmed tempo map. To move the cursor, use the "+" key. When you have what you want, press ENTER:

```
CHAIN MODE
1yes  2no
```

- Use the 10-key to turn CHAIN on or off, and press ENTER. While it is ON, the CHAIN LED will stay lit by turning MIDI CHASE key on.

5. MEMORY TRANSFER

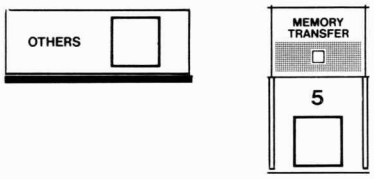
To save your valuable work, there are two ways to store the beat maps and other data outside the MIDiiZER's memory: on either an optional CM-16 memory card plugged into the front panel slot, or as a MIDI file in a sequencer. You can load that data back into the MIDiiZER at a later date if desired.

```
MEMORY  TRANSFER
   S=0
```

This screen is asking you which song data you want to transfer.

Here's the list of the data you can save or load;

- SONG NAME
- TEMPO MAP (TIME SIGNATURE AND TEMPO PROGRAM)
- MIDI START TIME




```
MEMORY  TRANSFER
 1SAVE  2LOAD
```

This screen is asking you whether you want to save the data to a card or MIDI file, or load it back from a card or MIDI file into the MIDiiZER's memory, overwriting what is there.

- Make your selection and press ENTER.

[5-1. SAVE]

If there is a memory card in the slot, this screen appears:

```
SAVE TO CARD?
 1yes  2no
```

If no card is in the slot, or you press NO, this appears:

```
SAVE BULK OUT?
 1yes  2no
```

Selecting "yes" in either case will execute the operation.

```
SAVE TO CARD
 EXECUTING
```

```
SAVE BULK OUT
 EXECUTING
```

When saving procedure is through, the display will automatically go back to the main screen.

[5-2. LOAD]

If you selected LOAD on the first screen, this will appear:

```
LOAD FROM CARD?
1yes  2no
```

If no card is in the slot, or you press NO, this appears:

```
LOAD BULK IN?
1yes  2no
```

Selecting "yes" in either case will execute the operation.

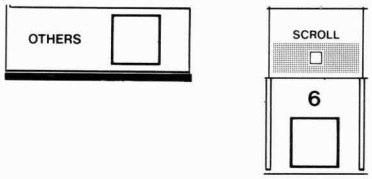
```
LOAD FROM CARD
EXECUTING
```

```
LOAD BULK IN
EXECUTING
```

When loading procedure is through, the display will automatically go back to the main screen.

6. SCROLL MODE

This mode allows you to "scroll" through a song tempo map using the rotary dial. It also shows the location and content of other points, such as End Limits, Cues, Punch in/out and Pre/Post roll, Events, and MIDI Program Change.




```
SCROLL
1SONG 2CUE 3PCHG
```

This is asking you what you want to scroll: a tempo map, the tape recorder autolocation and punch points, or the program change memories.

- Make your selection and press ENTER.

[6-1. SONG]

```
set song number
S=1
```

- Currently recalled song number will be shown above the cursor. Enter any song number (1 – 8) which tempo map you want to scroll, and press ENTER.

```
TIME SIG.=04/4
1  001 01  125
```

- Use the rotary dial to scroll through the tempo map.

[6-2. CUE]

```
01 00 00 00
   CUE NO=01
```

Using the rotary dial, you can scroll to check these points:

- CUE NO. 01 – 20
- AUTO REPEAT START
- AUTO REPEAT END
- END LIMIT START
- END LIMIT END
- PUNCH IN POINT
- PUNCH OUT POINT
- PRE ROLL TIME
- POST ROLL TIME

[6-3. PROGRAM CHANGE]

Depending on the method you have stored the point in EDIT mode, there are two possible modes; time code and bar/beat. If you have used BAR (bar/beat) for PC (Program Change) cue number 1, you will see:

```
01 CH=01 NO=001
   001 01
```

The top line is showing you the PC cue number, the MIDI channel, and the PC message. On the bottom is the song, bar and beat.

Having used T/C (time code) or MRK (mark) for PC cue number 2, you will see:

```
01 02 10 00
02 CH=05 NO=038
```

The top line is showing you the SMPTE time code point. The bottom line is showing you the cue number, the MIDI channel, and the PC message.

In either case, use the rotary dial to find the PC memory number you want to see more information on.

OFFSET KEY

If for some reason you want the master and slave transports to be synchronized, but not from the same time code point, the difference between the two is called an offset. For example, if a video master time code is 01:02:30:00, and you want to put a piece of music from an audio slave reading 01:04:45:00 at that point, the offset is +00:02:15:00—the slave should be locked 2 minutes, 15 seconds ahead of the master.

Pressing the offset key displays this screen, and causes the LED to light:

```
OFFSET MODE
1TRANSPORT 2MIDI
```

This screen asks you whether you want to offset the slave transport, or to set the MIDI start time. If you press ENTER while the cursor is under "1TRANSPORT", this screen will appear:

```
1TENKEY 2TRIM
TRANSPORT OFFSET
```

This screen asks you whether you want to offset the slave transport by using 10-key (for large amounts), or by trimming (which allows you to "tweak" the offset for very close synchronization). In "TENKEY" mode, you can set the offset value by hours-minutes-seconds-frames; in "TRIM" mode, you can set it in frames and sub-frames (1/100 of a frame).

If you selected "1TENKEY" and press ENTER, the screen shows:

```
±00 00 00 00
TRANSPORT OFFSET
```

Enter the entire number from the beginning. A "+" in the window means the slave is ahead of the master, a "–" means it will be behind. To change the + to a –, press the + key while holding SHIFT down, while the cursor is at the first character.

```
+01 00 00 00
 1set 2cancel
```

[Trim mode]

```
1TENKEY 2TRIM
TRANSPORT OFFSET
```

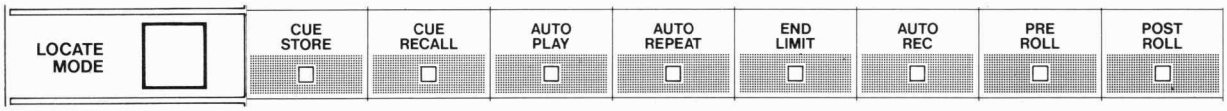
If you selected "2TRIM" and press ENTER, the screen shows.

```
TRIMMING +00+00
TRANSPORT OFFSET
```

In this mode you can adjust the OFFSET values in sub frame by using the rotary dial. Turning the dial clockwise increases the value above the curosr. Turn the dial counter-clockwise to decrease it. To move the cursor, use +/–key.

Press ESC or the OFFSET key to leave this mode. The offset value will remain the same until you reset it to +00+00 or enter a new OFFSET value with the 10-key mode.

LOCATE FUNCTIONS (Third row)



Pressing the LOCATE MODE matrix key gives you access to the autolocate functions of the MIDiiZER: all LEDs in the locate matrix will blink, asking you to make a choice among the following functions: CUE STORE, CUE RECALL, AUTO PLAY, AUTO REPEAT, END LIMIT, AUTO REC, PRE ROLL, and POST ROLL.

1. CUE STORE MODE

The MIDiiZER can memorize 20 different time code locations (called "cues") electronically, so you can (for example) mark the beginning of the chorus in memory and not have to re-enter the SMPTE frame number each time you want to return to it. These cues are used in locating the tape and in AUTO REPEAT mode.

The first step is to store the cue as follows:

- Press CUE STORE (LOCATE MODE, first column key) and this screen appears:

```
CUE STORE MODE
1T/C 2BAR 3MRK
```

This screen is asking you which of three methods you want to use to enter the cue: by time code number, bar/beat number, or by pressing the TAP/MARK key.

[Method 1-Cue by T/C]

If you ENTER "1T/C" the screen will change to:

```
00 00 00 00
CUE STORE MODE
```

Input the desired time code point with the ten key for each number. To store the location in memory, press ENTER and this screen will appear:

```
01 00 00 00
   CUE NO=00
```

Select a cue number (01 – 20) with the keypad and press ENTER.

```
CUE STORE MODE
1yes 2no
```

- Make your selection and press ENTER.

[Method 2–Cue by Bar/Beat]

Before start with this method, you have to set the song number first. Go back to SONG BANK mode and recall a song.

- If on the first screen you choose "2BAR", the screen will show:

```
CUE STORE MODE
1  000 00
```

and you can enter any musical point (BAR, BEAT) you wish to locate to or store. Input the bar and ENTER, then the beat and ENTER. You will see this screen:

```
   CUE NO=00
1  010 01
```

- As with T/C entry, this screen is asking you which of the 20 locations you want to store the location in. Input the number and press ENTER.

```
CUE STORE MODE
1yes 2no
```

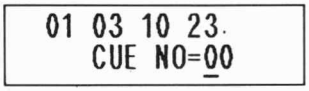
- Press 1 and ENTER to store the cue, or 2-ENTER to cancel.

[Method 3–Cue by MARK]

- If on the first screen you choose "3MRK", you can store points "on the fly" as tape is running:

```
00 00 00 00
   MARK
```

- Press the TAP/MARK key and the time code counter will be frozen at that point. To store this point as a cue, press ENTER.



- As with other entries, this screen is asking you which of the 20 locations you want to store the location in. Input the cue number and press ENTER.

- Make your selection (memorize or cancel) and press ENTER.

TIP: If you have no cue memory left, or just want to do temporary locate, press LOC before storing the point in a cue memory and the transports will move to that point. Press 2 and ENTER to leave this mode, or press ESC.

2. CUE RECALL MODE

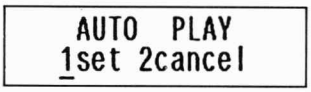
Cue recall is used to recall a point from memory so you can locate to it or check it. Pressing CUE RECALL (key 2 in LOCATE row) will display this screen:

When you input the cue number and press ENTER, it will be displayed as either time code or Bar/Beat, depending upon the method you entered it in CUE STORE MODE:

Press LOCate key to locate the selected transport by REMOTE SELECT key to the recalled cue point. To leave this mode, press the LOCATE MODE row key or ESC key.

3. AUTO PLAY MODE

This function allows you to turn the transport into play mode after every locate. The screen looks like this:



You can switch it on/off with the 10-key. Enter 1 and press ENTER to set AUTO PLAY. The AUTO PLAY LED will stay lit until you cancel it. While it's cancelled the transport simply stop after locate.

4. AUTO REPEAT MODE

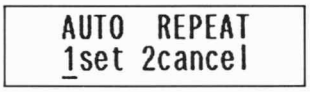
This function allows you to "loop" a section of the tape between 2 cue points on the remote selected deck, playing it over and over until you press STOP or cancel this mode.

NOTE: During AUTO REPEAT if you press STOP directly on the master or slave transport, it will stop if it is "Serial" interfaced, but "Parallel" interfaced transports will enter Pause mode.

Pressing key 4 in the LOCATE row shows this screen:

This screen is asking which cue points you want to be the Start cue and End cue.

- Enter your SCUE choice on the ten key pad, and press the ENTER key. The cursor will move to ECUE.
- Enter your ECUE number, then press ENTER. This screen appears:



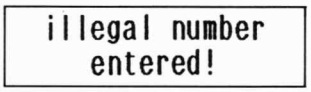
You can switch auto repeat on and off using the 10-key.

- Enter 1 and press ENTER to set AUTO REPEAT on. The auto repeat LED will stay lit until you cancel it (by going to this screen, pressing 2 and ENTER) or by pressing the STOP key while the transports are running.

NOTE 1: For AUTO REPEAT MODE, the REF T/C must be from the remote selected deck. You will leave this mode automatically when;

- The REF T/C doesn't match with the REMOTE SELECT.
- You change the REMOTE SELECT setting.
- You change the REF T/C SELECT setting.

NOTE 2: If you enter SCUE and ECUE numbers that have no or the same value in memory, or that are reversed in time, this "ERROR" message will appear:



5. END LIMIT MODE

End limit allows you to enter the beginning and end of the tape on the slave machine into the MIDiiZER's memory, so that the slave tape never runs off the end of a reel in fast forward or rewind modes. It can also be used to limit tape travel to a particular section of the slave tape you're working on.

Input the start point time code (if you recorded code from 00 59 30 00, 00 59 45 00 would be good for the starting limit), then press ENTER. The screen changes to:

```
00 00 00 00 END
  END LIMIT
```

Input the end point time code (for example, if each program is 30 minutes long, 01 30 15 00 would be good for the end limit) and press ENTER.

```
01 10 00 00 END
1set 2cancel
```

The end limit function can be turned on (set) or off (cancel) on this screen with the 10-key and pressing ENTER. The end limit LED will stay lit while it is ON.

NOTE: If you enter the start and end points value reversed, this "ERROR" message will appear:

```
      ERROR
in/out reversed!
```

6. AUTO REC

```
 AUTO REC
1POINT  2EXECUTE
```

The MIDiiZER Auto Rec Mode allows you to do punch-ins and outs on the slave machine, with more pinpoint accuracy and repeatability than is humanly possible with a footswitch or record button. The procedure consists of setting the in and out points (using key 6, AUTO REC), rehearsing your part, actually recording, and reviewing the results (using the AUTO REC MODE key on the right hand side) so you can do it again if necessary. It's like setting two special cue points.

6-1. POINT

Setting the IN and OUT points:

As with the CUE points, here are three ways you can enter the AUTO REC points: by time code number, by bar/beat number, or by hitting the TAP/MARK key:

```
AUTO REC POINT
1T/C 2BAR 3MRK
```

[**Method 1—Time Code points**] if you've chosen 1T/C (by entering 1 with the keypad and pressing ENTER), the screen changes to:

```
00 00 00 00
PUNCH IN POINT
```

- Enter a time code location using the keypad, and press ENTER:

```
00 00 00 00
PUNCH OUT POINT
```

This works the same way as PUNCH IN POINT.

```
AUTO REC POINT
1set 2cancel
```

- Press 1 to set the points, or 2 to cancel if you've made an error, and press ENTER.

[**Method 2—BAR/BEAT points**] If you've chosen BAR (by entering 2 with the keypad and pressing ENTER), this will display:

```
PUNCH IN POINT
1  000 00
```

- Input the bar/beat you want recording to begin, and press ENTER.

```
PUNCH OUT POINT
1  000 00
```

- Input the bar/beat you want recording to stop.

```
AUTO REC POINT
1set 2cancel
```

- Choose SET or CANCEL as before, and ENTER.

[**Method 3—MARK**] If you've chosen MARK (by pressing 3 on the first screen), this will display:

```
00 00 00 00
PUNCH IN POINT
```

- Put the transport selected by the REF T/C key into PLAY mode.
- When you hit the MARK key, it will "freeze" the current Master (or Slave, depending on REF T/C) T/C value for a fraction of a second.
- Press ENTER and that point is stored into memory as a record start point (but recording will not yet take place), and the screen will change to:

```
01 00 00 xx
PUNCH OUT POINT
```

- Hitting MARK again stores the out point for recording to stop. Press ENTER.

```
AUTO REC POINT
1set 2cancel
```

- Stop the transport. Choose SET or CANCEL and press ENTER.

6-2. AUTO REC EXECUTE

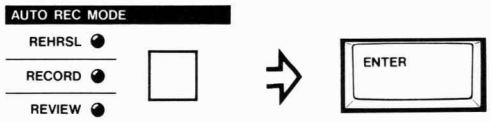
After entering the IN/OUT points, you can execute AUTO PUNCH-IN/OUT on the slave transport. Don't forget to turn on the rec function of the track you want to punch-in/out on.

```
AUTO REC
1POINT  2EXECUTE
```

- Enter 2 and press ENTER. The screen will be like this:

```
select
AUTO REC MODE
```

- Select an AUTO REC MODE by pushing the AUTO REC MODE key. At the desired mode, press ENTER and the transport will automatically start executing that mode.



NOTE: When you press ENTER, the REF T/C will automatically change to SLAVE.

Here's the detail of what you can do in each AUTO REC MODE:

[REHEARSAL MODE]

In a rehearsal, the transport under control does not actually go into record mode during the punch-in. Instead it switches the output of the record ready tracks from TAPE to SOURCE, just as it would during an actual punch in, so what you will hear from the tape returns during a rehearsal and what you hear during the actual record mode is the same. On TASCAM decks with an INSERT switch, it will automatically turn on and off by MIDiiZER for switching monitor. Make sure that the INSERT switch is OFF before you ENTER rehearsal mode. In addition, the some record lights will go from blinking (ready) to solid, though it isn't actually recording. Check the owner's manual of your transport for more information. IF YOUR TRANSPORT DOES NOT HAVE THE REHEARSAL FEATURE, YOU WON'T BE ABLE TO HEAR TAPE PLAYBACK DURING PRE- AND POST ROLL. Check your manual and test it before using it on critical material.

[RECORD MODE]

During the actual record mode, the Punch-In and Out will take place at the designated SMPTE time code points. However, note that all tape recorders, whether "gapless" or not have a space between the erase and record heads that must be compensated for when choosing your points. The amount of compensation depends on a number of factors, including the tape speed, space between the heads, and bias ramp-up times. For example, if a transport runs at 15 ips and its erase head is 1 inch ahead of the record head, it will take at least 1/15 of a second (or two SMPTE frames) for the erased tape to reach the record head and possibly more to account for bias ramping, etc. Experiment your machine on a non-critical piece of tape to learn what this offset is and adjust your points accordingly if you need absolute precision on your points.

CAUTION: Before executing an actual recording, be sure to confirm that the time code signal comes into the MIDiiZER with the CODE STATUS indicator. This is because the MIDiiZER would execute AUTO REC with the tach pulse, even without a time code signal, and may designate incorrect punch-in/out points from those you expect.

[REVIEW MODE]

This last step plays from the pre-roll point to the post-roll point and rewinds back to the start point.

If you press any of transport control keys while executing any modes, the AUTO REC will be interrupted. But you're still in AUTO REC READY mode (one of the AUTO REC MODE LED lit), will be able to start the procedure again by rewinding the tape before the PUNCH-IN point and pressing PLAY key.

After post roll, the tape will automatically stop and the LCD screen will go back to the beginning screen. You can change the points or execute the same or other AUTO REC mode.

To quit and leave AUTO REC MODE entirely, press the ESC key any time you want.

CAUTION:
If the transports are in CHASE mode;
1. You won't be able to execute actual punch-in/out until the slave "locks" to the master. Set the PRE ROLL time longer if you have trouble.
2. You can't go into AUTO REC READY mode by controlling the slave with transport control keys, because the master is still running. Be sure to control the master for interrupting AUTO REC.

7. PRE ROLL

When you're rehearsing or executing an auto record, not only can you store the in and out points but a starting point of a preroll so the musicians can hear a section of the music before the punch takes place. This point (set by the factory to 5 seconds) can only be entered as a certain number of minutes, seconds, and frames before the punch-in point. The limit of PRE ROLL time is between 1 frame and about 36 minutes, so set it with considering how long the slave will take to be "locked".

If you want a longer or shorter pre-roll time than 5 seconds:

- Press PRE ROLL (LOCATE MODE, column 7):

```
** 00 05 00
   PRE ROLL
```

- Input the time, and press ENTER.

```
** 00 15 00
 1set 2cancel
```

- Make your choice and press ENTER.

8. POST ROLL

Likewise, you may set a POST ROLL time after the punch out, at which the transport will automatically rewind to the beginning and stop. The limit of POST ROLL time is between 1 frame and about 36 minutes. (Also factory set to 5 seconds.)

- Press POST ROLL (LOCATE MODE, last column):

```
** 00 05 00
   POST ROLL
```

- Input the time by using the 10-key, and press ENTER.

```
** 00 10 00
 1set 2cancel
```

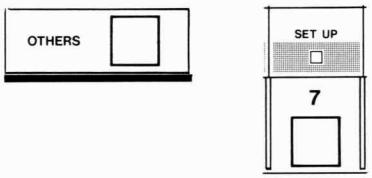
- Make you choice and press ENTER.

NOTE: When you turn the MIDiiZER's power OFF, AUTO REC points will be cleared and Pre/Post Roll times will be reset to the factory preset values (5 seconds).

OTHERS FUNCTIONS (Bottom Row)

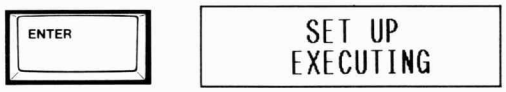
7. SET UP

"Set Up" has to do with the MIDiiZER learning the transport ballistics (i.e., what speed, what tach rate, how fast it rewinds) and the time code type of the master and slave transports. Every time you connect a new transport to the unit, you must put a tape striped with time code tape on the transport and go into this mode. See page 20, "Getting Started: Transport Synchronization".




```
SET UP
ENTER / ESCAPE
```

Press ENTER and the transport(s) will go through a 1 – 2 minute routine during which the MIDiiZER analyzes what type of parameters to use for the machine for run smoothly in lockup.




```
SET UP
EXECUTING
```

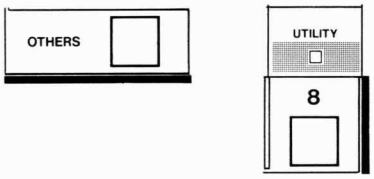
This message will appear in the screen during this period, followed by "SET UP END".

CAUTION: Do not touch any key while SET UP is being executed. This could interfere with the procedure and cause a mistake in learning the transport ballistics. If you do accidentally, go through this mode again from the start, and wait until "SET UP END" appears in the screen.

Machine set-ups can be stored into MIDiiZER's memory; so you don't have to do a SET UP again unless you add a different transport to be controlled by the MIDiiZER, or use different type of time code, or if the internal battery backup fails for some reason.

8. UTILITY

There are seven "housekeeping functions", both transport and MIDI related, covered by this key. The first screen asks you which utility you want to examine or use:




```
UTILITY
NO=00
```

- Input the number of the utility you want on the keypad, then press ENTER.

Here are details on each of the seven utilities:

[8-1. MEMORY ROOM]

This displays how much computer memory is left for tempo map of the song currently recalled.

```
U1  MEMORY ROOM
    1200 notes
```

[8-2. SONG COPY]

This utility allow you to copy the beat map of one song to another.

```
U2  SONG COPY
from S=0  to S=0
```

- Input the number of the song you want to copy, and press ENTER.

```
U2  SONG COPY
from S=1  to S=0
```

- Input the number of the song location you want to "paste" the copy in, and press ENTER.

```
U2  COPY EXECUTE
  1yes  2no
```

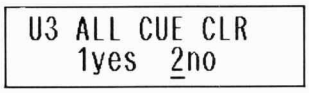
- This is your last chance to back out. When you copy to a memory location, all data in that song is erased.

If you try to copy a song to itself (i.e., from S=1 to S=1), this "ERROR" message will appear in LCD screen. screen.

TIP: If you want to delete only one song from MIDiiZER's memory, you can copy the blank song, which doesn't have any tempo map, over it.

[8-3. ALL CUE CLEAR]

This lets you clear all cues (1 – 20) in memory.



Select either one and press ENTER.

[8-4. ALL SONG CLEAR]

This clears the tempo map of every song in memory. Use it after you've saved memory to card or MIDI and want to start with a fresh slate.

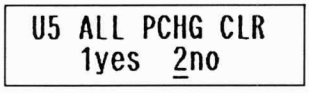
Select either, and ENTER.

NOTE: Using this function, you can clear:

- TEMPO MAP
- SONG NAME
- MIDI START POINT
- CHAIN Setting

[8-5. ALL PGM (PROGRAM CHANGE) CLEAR]

This will clear all program change data from the MIDiiZER's memory.



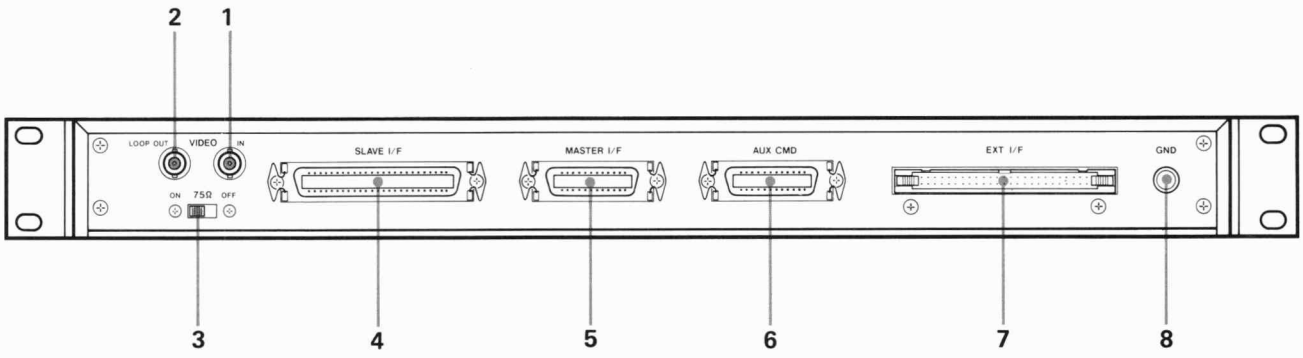
Select either and press ENTER.

[8-6. MANUAL CALIBRATION]
[8-7. EVENT]

These features are only available if using with the optional IF-1000 Parallel Interface Unit. For details, see page 49-53.

IF-1000 Parallel Interface Unit

FEATURES AND CONTROLS (IF-1000)



1. VIDEO IN
VIDEO IN is used to connect with the output of external video device or sync generator. When composite video/sync reference is connected here, the MIDiiZER reads vertical sync as if it were time code sync pulses, to achieve "Video lock". The MIDiiZER can generate "genlocked" SMPTE time code whenever a video signal is connected to this jack.

2. VIDEO OUT
This connector loops through the video/sync reference signal on the VIDEO IN connector, to the slave machine or other equipment.

3. 75-ohm ON/OFF
Terminates the video signal with a 75-ohms resistor.

4. Slave I/F
This connector has the inputs and outputs necessary for parallel interfacing with slave machines (transport remote commands, tally signals, tach pulses, servo reference, etc).

5. Master I/F
This connector has inputs and outputs necessary for parallel interfacing to the master. Note that it is possible to synchronize a slave to the master using time code only, but you must use this connector if you want to control a parallel-interfaced master from the MIDiiZER transport controls.

6. AUX CMD
Issues auxiliary commands for controlling event operations.

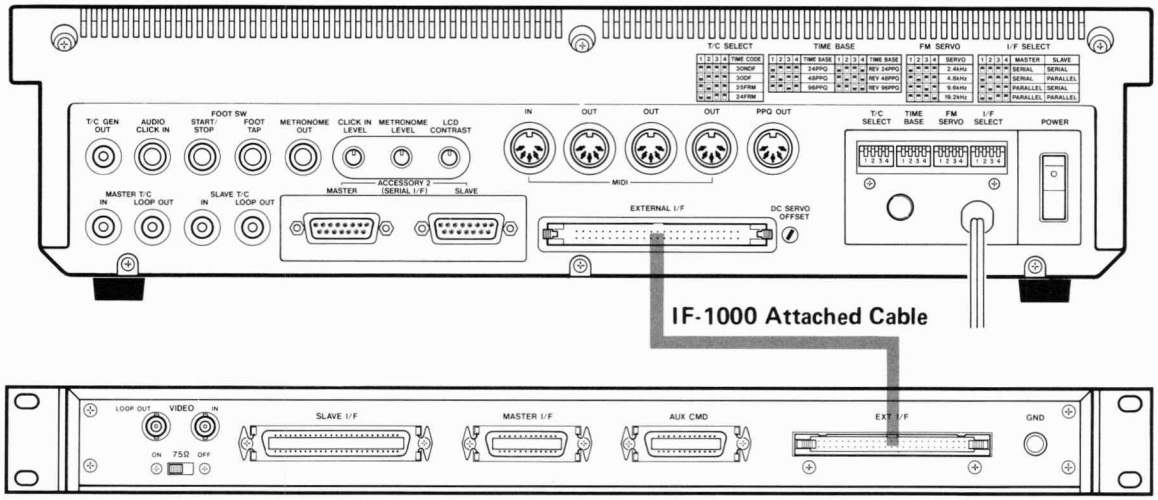
7. EXT I/F
For connecting the MTS-1000 MIDiiZER to the IF-1000 with the attached cable.

8. GND
A chassis grounding post.

CONNECTIONS (IF-1000)

1. With MTS-1000

Use the attached cable and connect from EXT I/F to MIDiiZER's EXTERNAL I/F port. Before connecting, make sure the MIDiiZER's power is OFF.

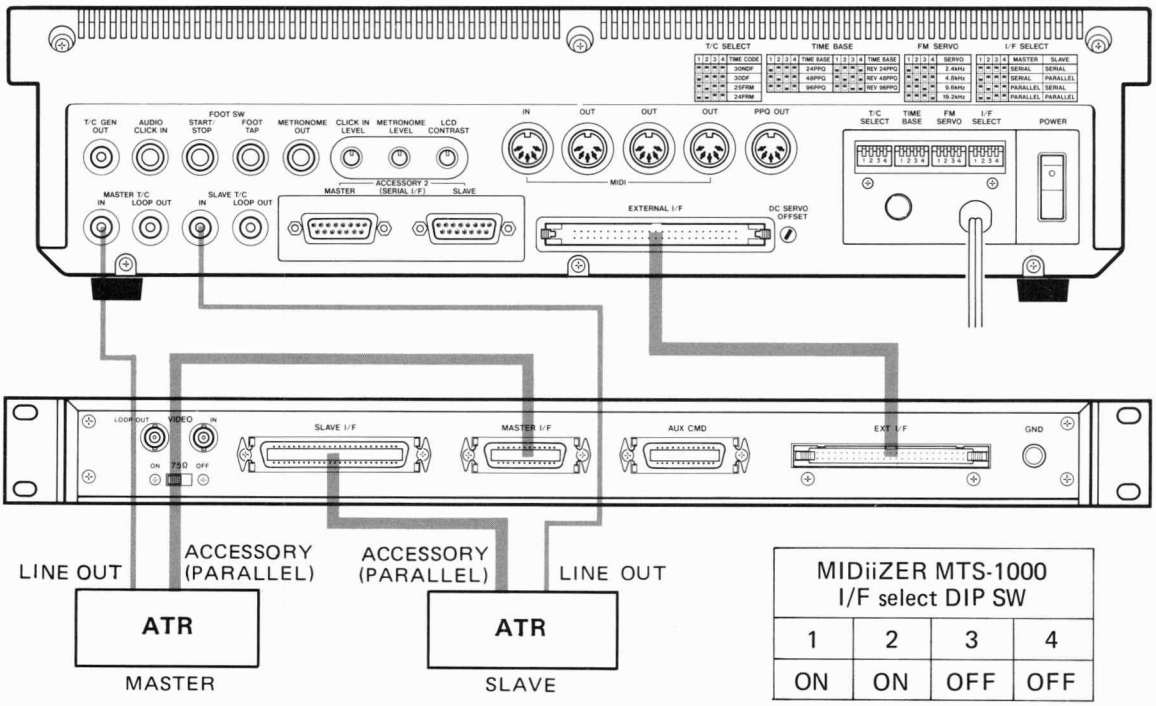


2. With ATR

- Connect the output of the master track carrying time code directly to the MASTER T/C IN of the MIDiiZER.
- Connect the output of the slave track carrying time code directly to the SLAVE T/C IN of the MIDiiZER.

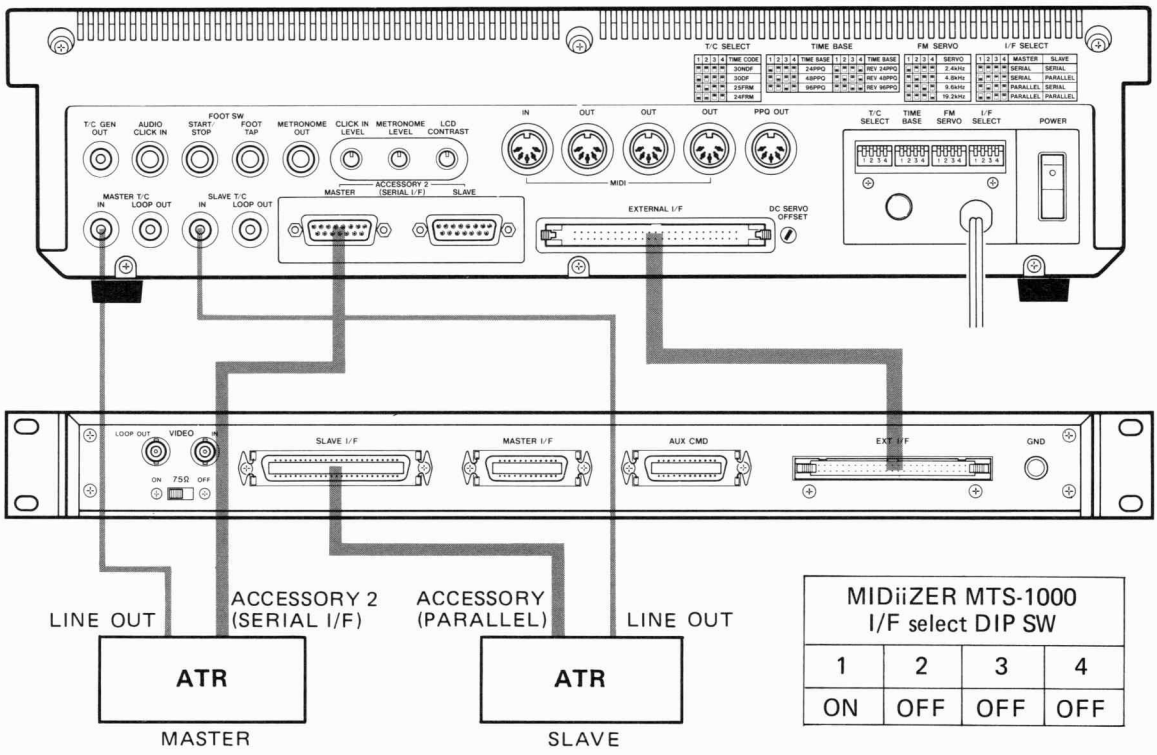
The following diagrams show how to connect the control interfaces to the machines depending on the type:

Example 1: For connecting both the master and slave with parallel interfaces.



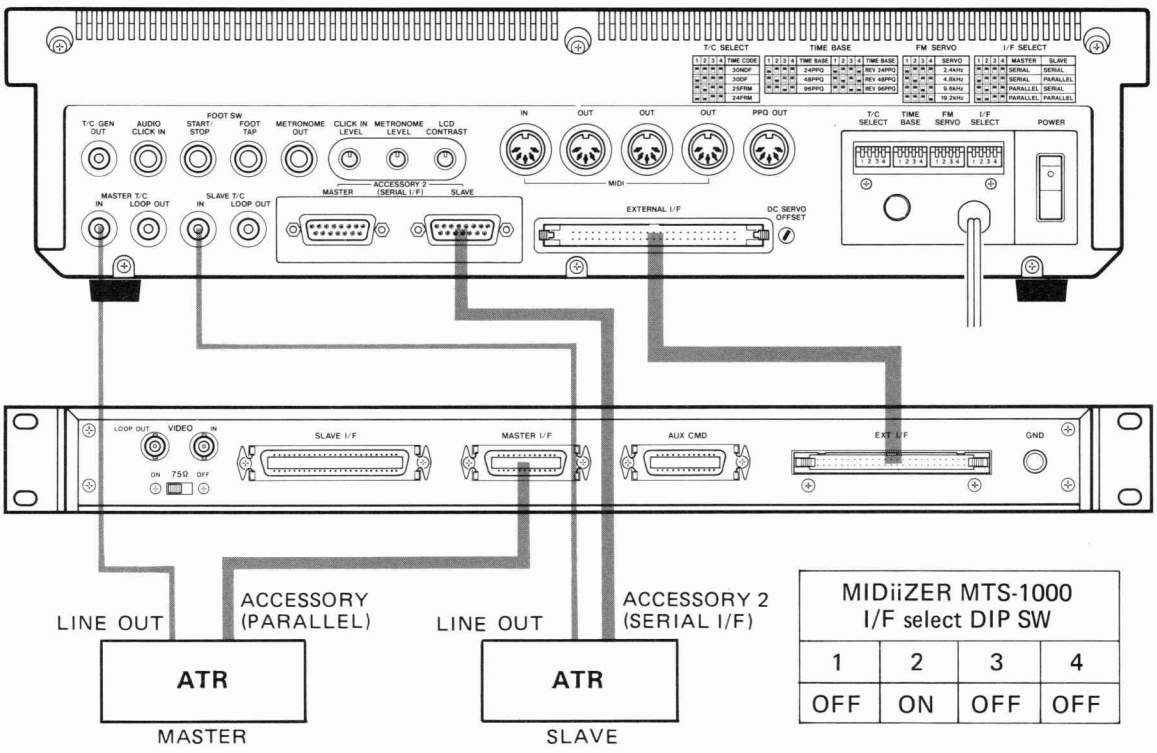
MIDiiZER MTS-1000 I/F select DIP SW			
1	2	3	4
ON	ON	OFF	OFF

Example 2: For connecting a master with a serial interface, and the a slave with a parallel interface.



MIDiiZER MTS-1000 I/F select DIP SW			
1	2	3	4
ON	OFF	OFF	OFF

Example 3: For connecting a master with a parallel interface, and a slave with a serial interface.



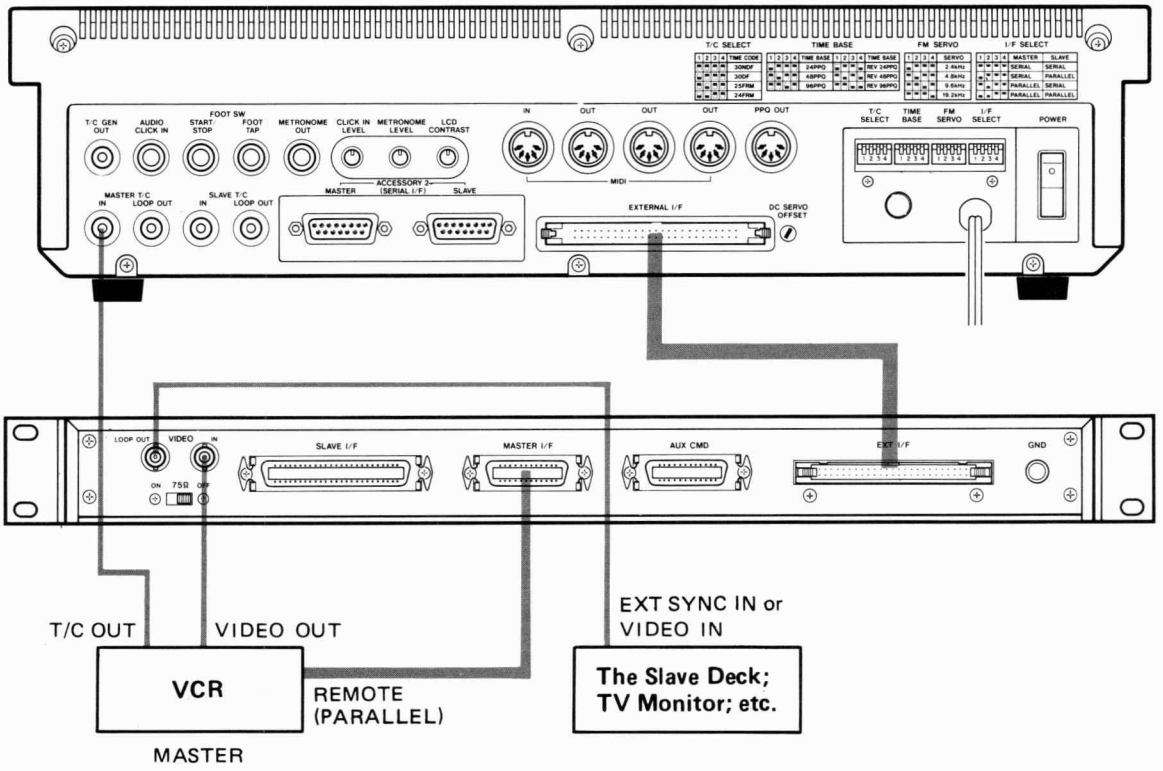
MIDiiZER MTS-1000 I/F select DIP SW			
1	2	3	4
OFF	ON	OFF	OFF

NOTE 1: Operating procedures are generally the same when using the IF-1000 and a parallel transport, as when using the MIDiiZER with serial transports only (See page 21). The major exception is that you cannot remote control the rec functions (track select) on a parallel-controlled machine from the MIDiiZER.

NOTE 2: Check to see if the transport you want to control has a REMOTE/LOCAL switch that must be set to "remote" before external control will be accepted.

With VCR as the master

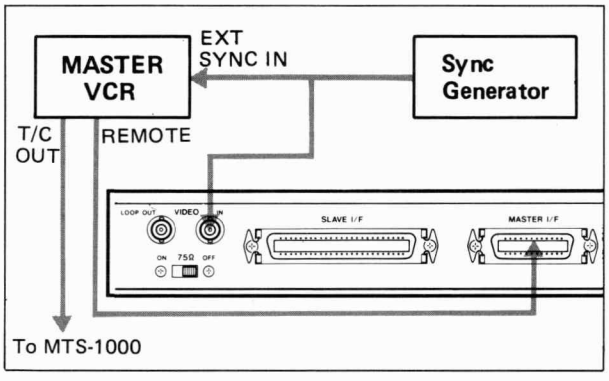
For connecting the slave machine, see the above examples.



When you chase the slave to the master in this case, after catching up the master and locking by timecode the slave will sync-lock to the video signal.

NOTE: If a professional-type VCR is used, since the time code which is output in fast-forwarding or rewinding cannot be read by the MTS-1000, input the tach pulse to the MTS-1000 by connecting the REMOTE connector of the master VCR to the MASTER I/F connector of the IF-1000.

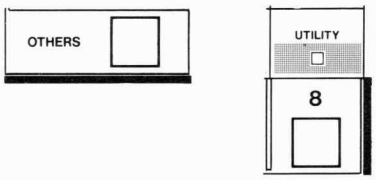
NOTE about 75-ohm ON/OFF:
Set the "75-ohm" switch to ON to terminate the VIDEO IN signal. Set to OFF to "loop out" the VIDEO IN signal.



When using a VCR as the master and an ATR as the slave, connect a Sync Generator to both the master and IF-1000, which will ensure a more stable sync. However, the MTS-1000 does not re-generate time code or jam sync.

Manual Calibration

The internal variables that govern how the MIDiiZER controls the transports attached to it are set automatically during the SET UP procedure. There may be times where you want to adjust these variables to different settings; Utility #6 allows you to do that:




```
U6  MANUAL CAL
NO=00
```

Input the Item number you wish, as follows:

1. **Chase Response:** Sets the slave's response in following the master.
2. **Servo Response:** Sets the slave capstan servo response.
3. **Servo Damping:** Sets the degree of the slave servo damping.
4. **Servo Gain:** Sets the slave servo loop gain.
5. **Start Advance:** Sets how much ahead of the master the slave starts in chase.
6. **FM Servo Trim:** Adjusts the FM servo set by the rear panel's DIP switch.
7. **Master Brake:** Sets where the master transport starts braking in search.
8. **Slave Brake:** Sets where the slave transpor starts braking in search.

You will then get a screen like this:

```
NO=1 CHASE RESP
VALUE=00
```

You may now change the variable (via the 10-key) and pressing ENTER.

```
NO=1 CHASE RESP
1yes 2no
```

Basically, if you don't have a good reason for changing a parameter, or don't understand what it is, don't change it—you could damage the tape or transport.

Parameter No.	Definition	Maker	TEAC		OTARI		STUDER		FOSTEX	
		Tape width	1/4" to 1"	2"	1/4" to 1"	2"	1/4"	2"	1/4"	1/2"
1	Chase response		4		4		4		4	
2	Servo response		3-4		3-4		4-5	5-6	4-5	
3	Servo damping		1-4		3-4		4-5		4-5	
4	Servo gain		3-4		3-4		4-5		DC: 6-8 FM: 3-4	
5	Start advance		0-1	5-7	2-3	4-6	1-3	2-4	1-3	
6	FM servo trim		5		5		5	1*	5	
8	Slave brake		3-5	1-3	3-5		1-2		2-4	

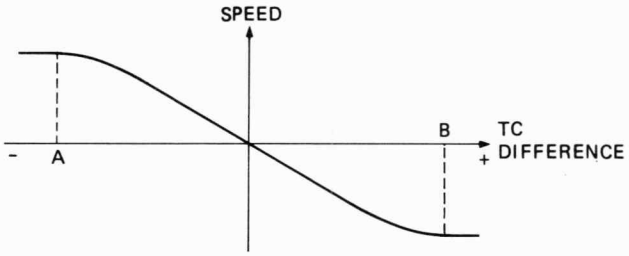
*) With STUDER A-800 MkII (its FM servo is set to 3.2 kHz), set the MTS-1000'S FM Servo DIP SW (on the rear panel) to 2.4 kHz position and set the FM servo trim constant (parameter 5 in table) to 0 (zero).

NOTE 1: Although the values for items 1 – 4, 7 and 8 are learned in the SET UP procedure, the values for items 5 – 6 are not the type which are learned in SET UP.
Once the values in items 5 and 6 are changed, they are backed up by battery and maintained until they are changed the next time. The initial values on shipment are; Start Advance, "5" and FM Servo Trim, "5".

NOTE 2: After you have executed Manaul Calibration, you MUST turn off the power to the MIDiiZER and switch it on again to make the new values effective.

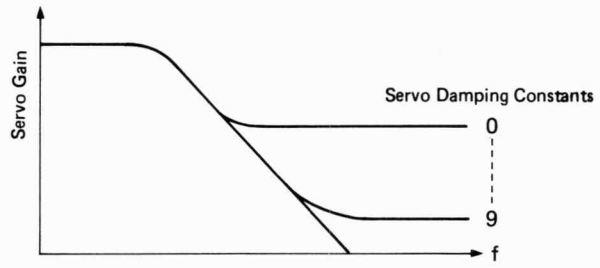
BRIEF THEORETICAL DESCRIPTIONS ABOUT SERVO RESPONSE, SERVO DAMPING, AND SERVO GAIN

1. Servo Response



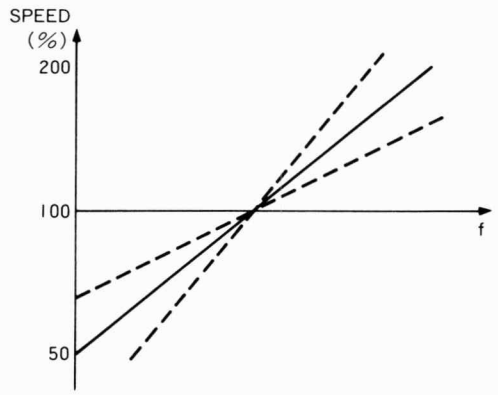
The above diagram depicts the relationships between TC (timecode) difference (or distance) and slave's capstan speed. When the TC difference is in the "+" region (that is, when the slave is ahead of the master), the slave's capstan speed is caused to start varying at B shown. In the "-" TC difference, the capstan speed starts varying at point A shown. Servo response is a parameter that defines the position of points A and B.

2. Servo Damping

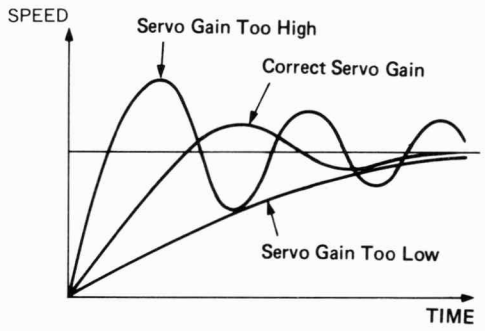


The above diagram shows the frecuency characteristics of servo loop. Servo damping is a parameter that determines the servo loop gain in high frequency regions, to control external high frequency disturbance, thus increasing the total damping effect of the servo loop.

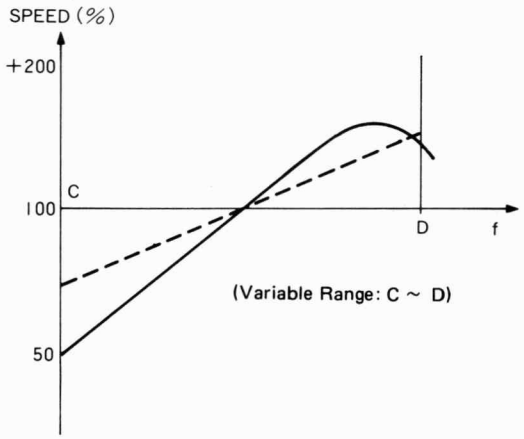
3. Servo Gain



The above diagram shows the relationships between capstan speed and FM servo frequency. The servo gain refers to a parameter that determines the angle of the oblique line shown.



The above diagram shows servo gain indicial response. Adjust both servo damping and servo gain so that lock-up time is as possible as short (quick stabilization of the machines in lock).

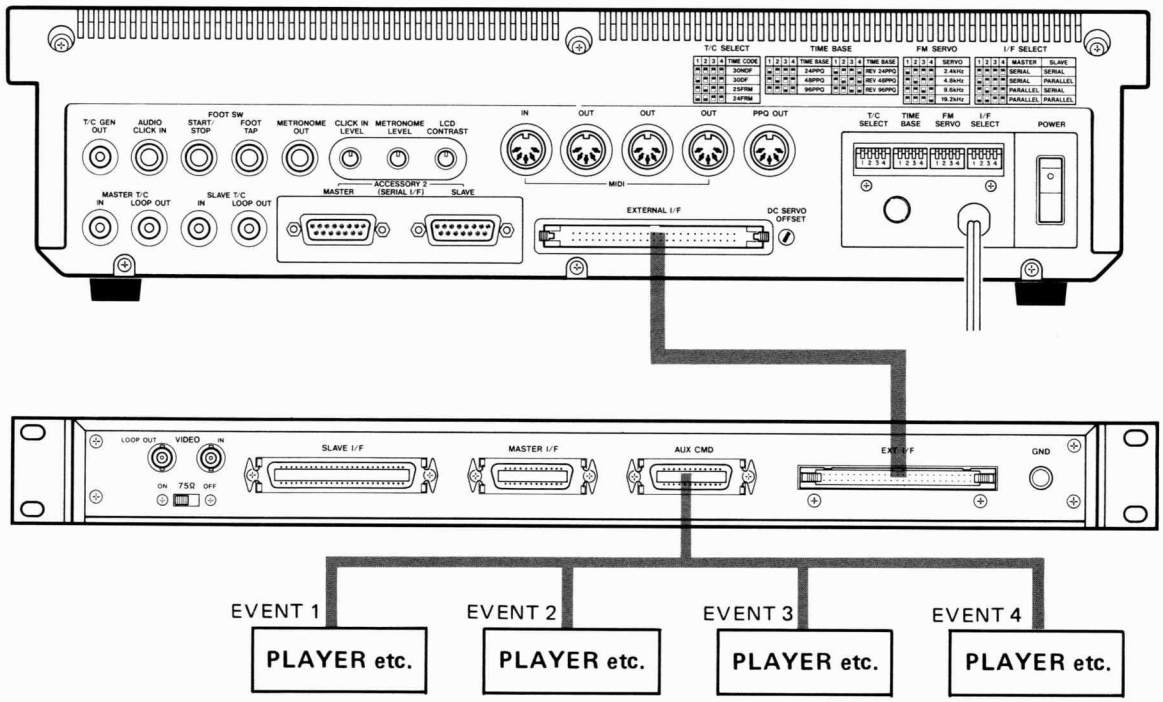


For example, if the relationships between capstan speed and FM servo frequency are as shown in the above diagram, SET UP could possibly not ensure the correct behavior of the machines. The servo gain need then be adjusted using the manual calibration so that the servo gain represents a linear characteristic in the variable range C-D shown.

Event

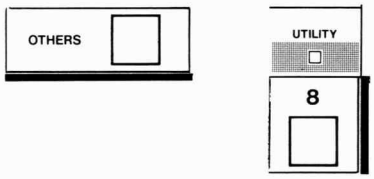
An "event" is a contact closure controlled by the MIDiiZER, wired to an external device that starts or stops on command, such as CD players or cart machines, electrical equipment, or sound effects from certain switch-equipped samplers.

1. Connections



2. Operation

First, go into UTILITY mode.




```
UTILITY
NO=00
```

Enter "07" using the 10-key, and press ENTER.

```
NO=07
U7 EVENT STORE
```

This screen is asking you which event (out of 4 that are available) you wish to store. Enter the desired number by 10-key and press ENTER.

```
00 00 00 00
U7 EVENT STORE
```

This screen is asking you where the event will take place in time code location. Enter the desired value by 10-key and press ENTER.

```
U7 EVENT STORE
1yes 2no
```

If you choose 1yes, it will be stored into the memory and ready to be executed.

NOTE1: If you enter more than 5 for the EVENT NO., this error message will appear;

```
illegal number
entered!
```

Press ESC to go back to the main screen.

NOTE2: All event points will be cleared when you turn the MIDiiZER's power OFF.

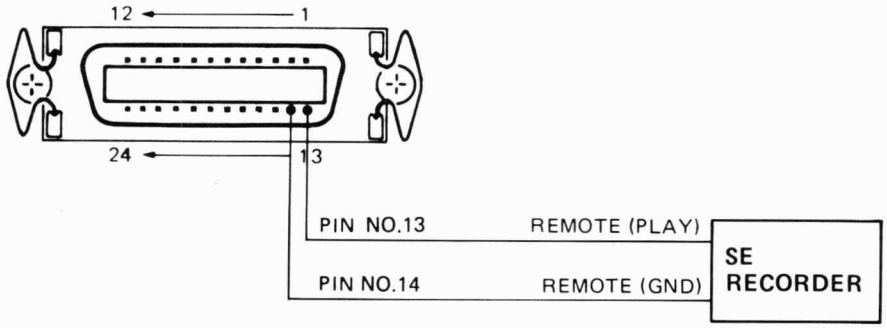
3. EVENT TRIGGERINGS

1) Applications of EVENTs

(1) Triggering effects units

I. Driving SE (Sound Effects) recorders

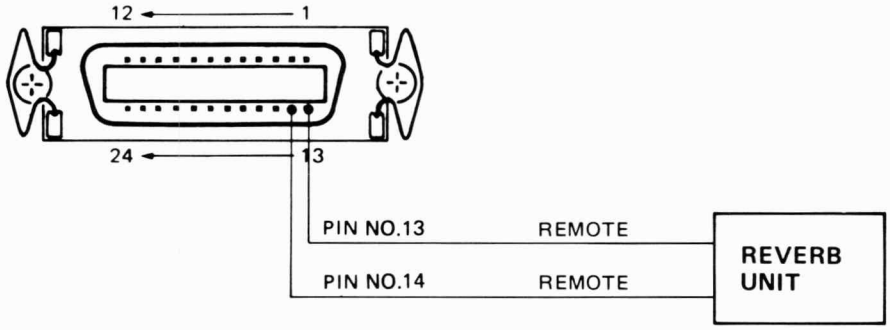
AUX CMD on the IF-1000



The diagram above shows that EVENT 1 is used to trigger an SE recorder. When the reference timecode matches the timecode registered in EVENT 1, the EVENT 1 relay (of the AUX CMD connector) will switch so that the SE recorder starts.

II. Driving reverb units

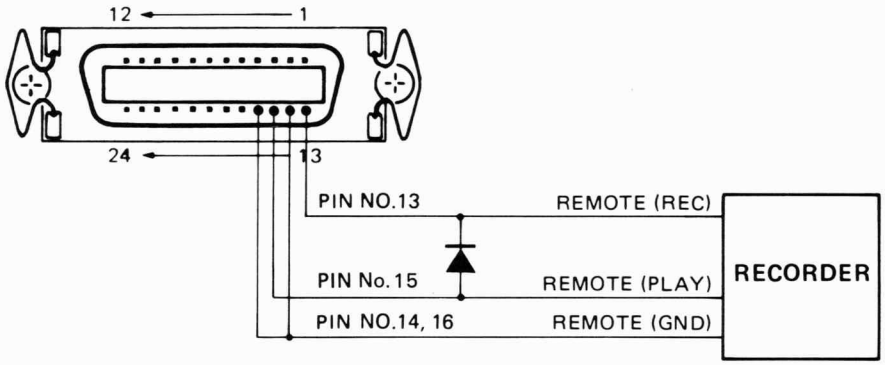
AUX CMD on the IF-1000



The diagram above shows the case in which the EVENT 1 program is used to trigger reverb unit. If you want to use other EVENTs, consult the pin chart contained in the Pin Assignment Chart (page 57).

(2) Access to auto record entry/exit using trigger EVENTs

AUX CMD on the IF-1000



In the diagram above, EVENT 1 is assigned for record entry and EVENT 2 for record exit. When the master timecode matches the timecode stored in the EVENT 1 register, the relay for EVENT 1 will switch so that the recorder enters record mode. When the master timecode matches the timecode stored in the EVENT 2 register, the relay for EVENT 2 will switch so that the recorder stops recording.

The diode shown in the diagram need be inserted when the tape recorder associated is a type that enters record mode with a double command of Rec and Play and stops recording with Play command. With machines that enter record mode upon receipt of only Rec command, the diode need not be connected.

2) Precautions

(1) The trigger EVENT signals are sent out through the AUX CMD connector on the IF-1000, in "one-shot mode" (when the registered time comes, the corresponding output relay switches on only for a duration of 0.5 sec.). Check therefore to make sure that the external unit is compatible with this "one-shot mode."

(2) In contrast to EVENT REC, that can not start unless the slave is already locked to the master when the programmed record entry point is reached, the trigger EVENTs operate whether or not the machines are locked.

(3) EVENTs are programmable regardless of the current transport status. But remember this: Trigger EVENTs can be set only ahead of the current master tape location. The EVENT registers 1 thru 4 are not available to store any points which are found behind the current master tape location. (An LED does not want to turn on any of the four EVENT keys.)

DC Servo Offset

DC SERVO OFFSET ADJUSTMENTS

DC servo offset determines the servo balance of the slave deck connected to the MTS-1000, directly or through the IF-1000 parallel interface unit. The MTS-1000 is factory preset to +5 V, which is the reference voltage the TASCAM serial control machines (such as the 238) are set to, and the IF-1000 is factory preset to 0 V, which is the reference voltage the TASCAM parallel control machines are set to.

Those DC servo offsets need be adjusted when and only when the following occurs despite completion of the Set-up.

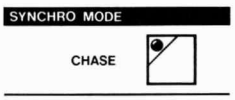
- The slave deck does not lock up to the master.
- The slave drags in catching up the master.
- After once locked together, the slave tends to unlock as "chase and lock" repeats, or, though not unlocked, the behavior of the slave is not stable.

WARNING! Refer all internal settings to qualified personnel. The user should not attempt at any internal settings and adjustments. In no event shall TASCAM/TEAC be liable for any consequential accidents, damages both personnel and material, or any other troubles for breach of the warning above.

I. MTS-1000

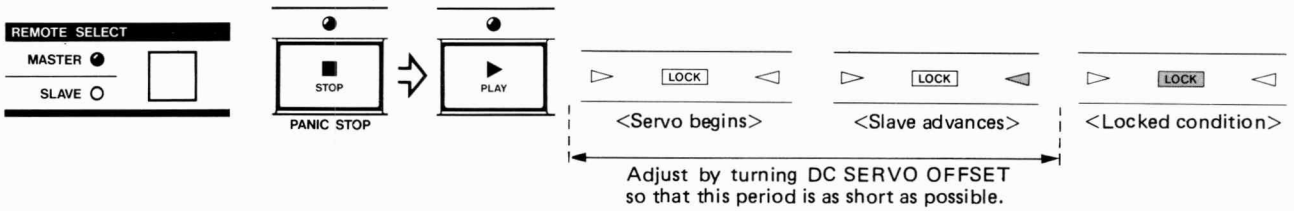
If you are using a serial control slave, perform the following:

1. Press CHASE. The slave will start chasing the master.



2. If the slave won't lock to the master, slowly turn the DC Servo Offset pot left and right using regular (slot blade) screwdriver, until both machines lock together.

3. After they have locked, toggle the master between stop and play to watch the LOCK LED and the behavior of the slave, and adjust the DC Servo Offset pot again so that the LED turns on in as short a delay as possible and the slave's motion is most smooth.



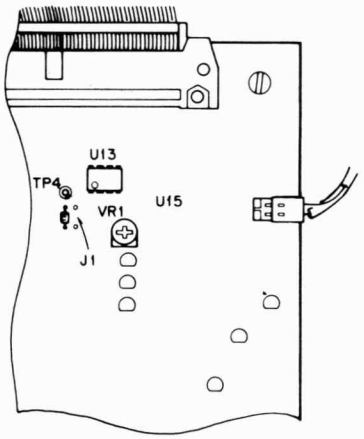
NOTE: Lock-up time varies depending on various factors: whether the slave speeds up or inversely slows down to catch up the master, relative tape pack on both reels, etc.

II. IF-1000

If you are using a parallel slave machine, proceed as follows:

1. Making sure that the MTS-1000 is turned off, open the IF-1000's top panel.
2. Connect a digital DC voltmeter between test point TP4 and GND (chassis) on the I/F PC Board.
3. Immediately after switching power to the MTS-1000, set VR1 to match the setting value of your machine (consult the table below or check with the manual of your machine).
4. Have the slave catch up the master. If necessary try moving VR1 slightly, then recheck.

If the capstan servo's work range is too wide to cause the DC servo voltage to swing exceeding the limits of +/-10 V, then plug a jumper wire into J1 shown. This will reduce by half the voltage swing.



DC Servo Voltage Settings for Typical Machines

Transport	Setting Value	Reference
TASCAM Machines	0 V	0 V
SONY PCM-3324	0 V	0 V
STUDER A-80VU	-7.5 V	+7.5 V
SONY BVU-800 Series	-3 V	+3 V
FOSTEX B-16	+9 V	+9 V

Specifications

[MTS-1000 MIDiiZER]

Display: LCD (16 columns x 2 row, with backlight)
No. of Songs: 8 songs max.
No. of Notes Memorized: 1200 notes max./song (9600 notes/8 songs)
No. of Bars Memorized: 300 bars max./song (2400 bars/8 songs)
Compatible Tempo Range: ♩ = 20 to 250
Compatible Time Sigature Range: 1/4 to 15/4, 1/8 to 15/8
MIDI Program Change: 99 points
Cue Points: 20 points
Events: 4 points (with IF-1000 connected)
Rec Function: 16 channels max. for both master and slave transports
Machine Control: STOP, PLAY, F.FWD, REW, REC
PPQ Output
Time Base: 24, 48, 96 PPQ
Start/Stop Trigger Output: TTL level
Compatible Timecodes: SMPTE 30NDF (Non Drop Frame)
SMPTE 30DF (Drop Frame)
EBU 25 frames
FILM 24 frames

Inputs
Timecode Input (both master and slave):
Input impedance: 10 kohms or more
Reference input level: 0.15 Vp-p to 3 Vp-p
Audio Click Input:
Input impedance: 50 kohms or more
Reference input level: -50 dBV (3 mV) or more

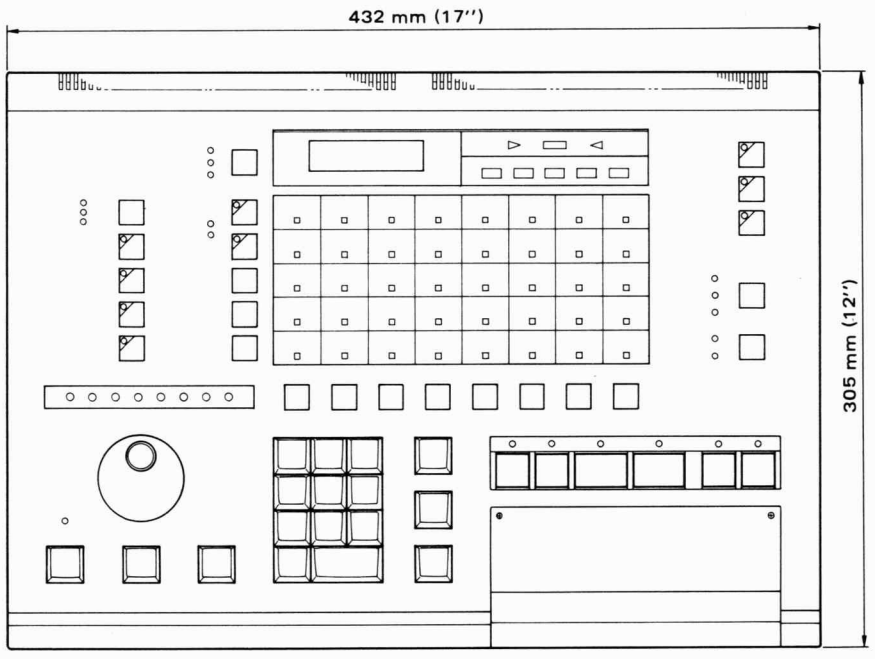
Outputs
Timecode Output (both master and slave):
Output impedance: 2 kohms or less
Reference output level: 0.6 Vp-p
Loop Output:
Output impedance: 2 kohms or less
Reference output level: 0.6 Vp-p
Metronome Output:
Output impedance: 220 ohms or less
Reference output level: -10 dBV (0.316 V)

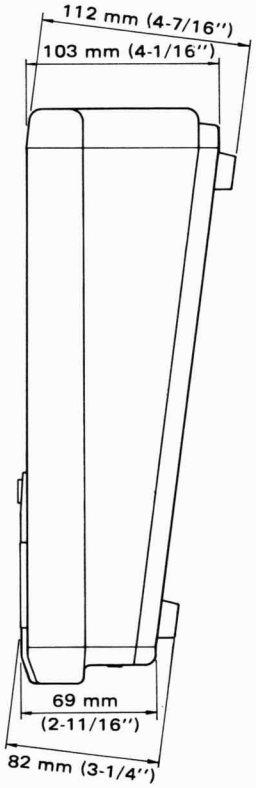
DC Servo Output
Offset voltage variable range: ±10 V
Output impedance: 1 kohm or less

FM Servo Output
Output center frequencies: 2.4k, 4.8k, 9.6k, 19.2 kHz
Output impedance: 1 kohm or less

Power Requirements:
USA/CANADA 120 V AC, 60 Hz
U.K./AUSTRALIA 240 V AC, 50 Hz
EUROPE 220 V AC, 50 Hz
GENERAL EXPORT 100/120/220/240 V AC, 50/60 Hz

Power Consumption: 10 W
Dimensions (W x H x D): 432 x 305 x 112 mm (17" x 12" x 4-7/16")
Weight: 7.3 kg (16-1/16 lbs)
Supplied Accessories: Operation Manual, Warranty Card





[IF-1000 Parallel Interface Unit]

<INPUT>

Video Signal (Master transport only)

Type: NTSC or PAL
Negative sync composite

Level: 1.0 V ±0.2 V
Composite sync signal

Machine Status (Tally): PLAY, STOP, F.FWD, REW, REC
High level = +4 to +23 V
Low level = +0 to +0.5 V

Tape Speed Pulse (Tach):
4 Hz or more on PLAY
2.5 kHz or less in max. speed
High level = +4 to +15 V
Low level = +0 to +0.5 V

<OUTPUT>

Machine Control: PLAY, STOP, F.FWD, REW, REC Open Collector

Servo (Slave transport only):

[DC]

Setting Range: +10 to -10 V

Output Impedance: 1 kohm or less

[FM]

Output Center Frequencies:
2.4 k, 4.8k, 9.6k, 19.2kHz

Output Level: High level = +4 V
Low level = +0.4 V

Output Impedance: 100 ohms or less

<GENERAL>

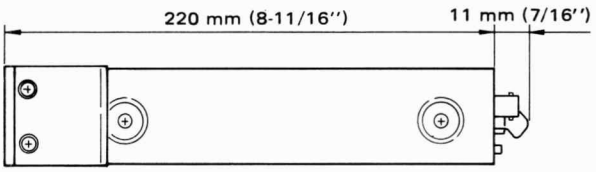
Power Requirements: DC +5 V and ±15 V (supplied from MTS-1000)

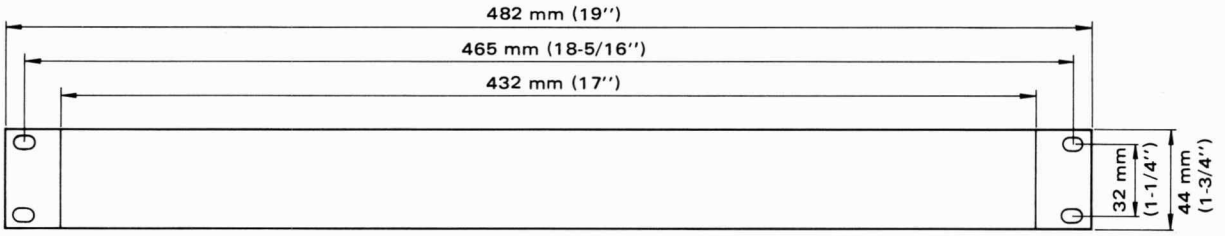
Dimensions (W x H x D): 482 x 231 x 44 (19" x 9-1/8" x 1-3/4")

Weight: 2.4 kg (5-5/16 lbs)

Supplied Accessories: Interface Cable (for connection to MTS-1000)
Rubber Feet (x 4)
Warranty Card

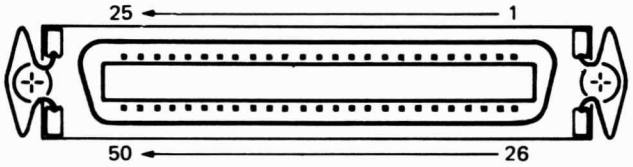
Changes in specifications and features may be made without notice or obligation.





PIN ASSIGNMENT CHARTS (IF-1000)

SLAVE I/F Connector (50 Pin, Unphenolic)



? : TALLY
! : COMMAND

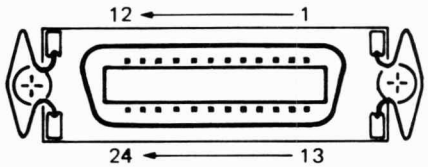
Pin #	Signal	Description
1	TALLY SUPPLY	Supply voltage (+5 to +24 V) is fed via this pin to the tally input circuits.
2	STOP?	Each pin receives the corresponding tally signals. Active in Low.
3	FF?	
4	REW?	
5	PLAY?	
6	REC?	
7	TACH+	Receive tach and CTL pulses ("High" via pin 7, "low" via pin 8).
8	TACH-	
9	DIRECTION +	Receive tape direction signals ("High" via pin 9, "low" via pin 10).
10	DIRECTION -	
11	FM SERVO OUT	Issues capstan FM servo reference, square wave of 5 Vp-p and 50 % duty factor.
12	FM SERVO COMMON	
13	DC SERVO 1 OUT	Issues capstan DC servo reference, ±10 V. Voltage rises as capstan speed increases.
14	DC SERVO 2 OUT	Issues capstan DC servo reference, in opposite phase to DC SERVO OUT 1.
15	DC SERVO GND SENSE	
16	DC SERVO GND	
17	–	
18	LOCK NC	
19	LOCK COM	
20	LOCK NO	
21	–	
22	SYSTEM GND	
23	–	
24	0 V	
25	+5 V	
26	COMMAND SUPPLY	Only when a voltage +5 to +24 V is supplied via this pin, the commands below can be issued.
27	STOP!	
28	FF!	
29	REW!	
30	PLAY!	
31	REC IN!	
32	REC OUT!	
33	RECORD!	
34	REHEARSAL!	
35	LIFTER!	Issues a signal that enables to retract tape lifters.
36	MUTE!	Issues a signal that enables to mute audio outputs during Search mode.
37	LOCK!	Issues in open collector a signal that enables to lock the slave to the master. Active when and while lock is achieved.

SHEET 1 OF 2

Pin #	Signal	Description
38	SERVO ENABLE!	Goes active enabling slave servo.
39	SYNC!	Goes active when lock is achieved and will remain active for as long as lock is held.
40	COMMAND COMMON	
41	–	
42	–	
43	SERVO ENABLE NC	
44	SERVO ENABLE COM	
45	SERVO ENABLE NO	
46	–	
47	SYSTEM GND	
48	–	
49	0 V	
50	+5 V	

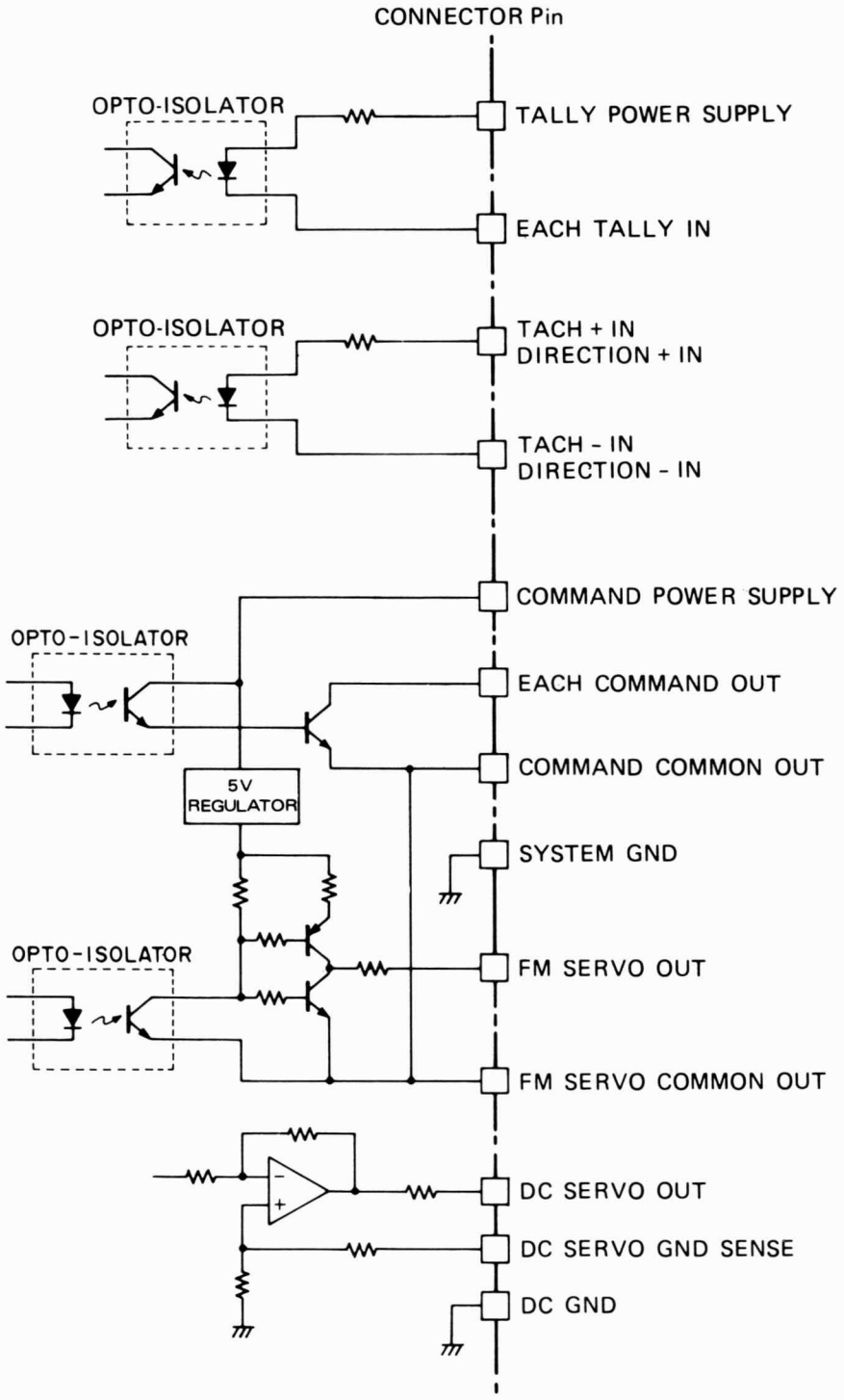
SHEET 2 OF 2

MASTER I/F Connector (24 Pin, Unphenolic)

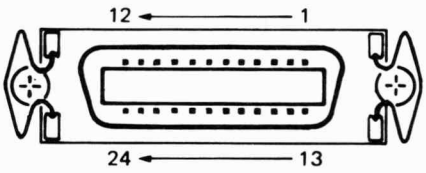


Pin #	Signal	Description
1	TALLY SUPPLY	Supply voltage (+5 to +24 V) is fed via this pin to the tally input circuits.
2	STOP?	Each pin receives the corresponding tally signals. Active in Low.
3	FF?	
4	REW?	
5	PLAY?	
6	REC?	
7	TACH+	Receive tach and CTL pulses ("High" via pin 7, "low" via pin 8).
8	TACH-	
9	DIRCTION +	Receive tape direction signlas ("High" via pin 9, "low" via pin 10).
10	DIRECTION -	
11	0 V	
12	+5 V	
13	COMMAND SUPPLY	Only when a voltage +5 to +24 V is supplied via this pin, the commands below can be issued.
14	STOP!	
15	FF!	
16	REW!	
17	PLAY!	
18	REC!	
19	–	
20	–	
21	COMMAND COMMON	
22	–	
23	0 V	
24	+5 V	

INSIDE THE IF-1000

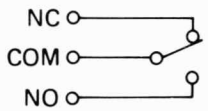


AUX CMD Connector (24 Pin, Unphenolic)



Pin #	ASSIGNMENT
1	REC IN NC
2	REC IN COM
3	REC IN NO
4	REC OUT NC
5	REC OUT COM
6	REC OUT NO
7	LOCK NC
8	LOCK COM
9	LOCK NO
10	MASTER TIME CODE
11	
12	
13	EVENT 1 COM
14	EVENT 1 NO
15	EVENT 2 COM
16	EVENT 2 NO
17	EVENT 3 COM
18	EVENT 3 NO
19	EVENT 4 COM
20	EVENT 4 NO
21	MASTER TACH
22	MASTER DIRECTION
23	
24	

Relay Switch



Optional Accessories

PW-5MD Accessory 2 Cable

An exclusive cable used for connection between a TASCAM tape recorder having an Accessory 2 jack and the MTS-1000 MIDiiZER.

Applicable models (as of October, 1989)
TASCAM MSR-16
TASCAM TSR-8
TASCAM 238 SYNCASET
TASCAM 644 MIDISTUDIO
TASCAM 688 MIDISTUDIO

RC-30P Remote Footswitch

When connected to the REMOTE jack on the rear of the MTS-1000 and pressed, either footswitch controls START/STOP in MANUAL PLAY mode, and has the sequencer start and stop with the MTS-1000's own tempo control. Also, when building tempo maps, they can be used as TAP key. (The RC-60P has two switches and, with the MTS-1000, only one switch is active.)

CM-16 Memory Card

These are exclusive memory cards which allow the tempo data made by the MTS-1000 to be 4tored in memory for individual songs. When using memory cards, pay attention to the following:

- Avoid exposing to high temperatures, high humidities and direct sunlight.
- Do not touch the connector section with your fingers or a metal object, etc.
- Do not ben or apply excessive shocks.
- Never throw into a fire.
- Do not expose to water.
- Never try to disassemble cards.
- Be sure to replace the battery inside the card before it is exhausted. When replacing the battery, the contents of memory will be erased, so dump the data into the MTS-1000 first. (See page 35 – 36.)

ADVARSEL!
Lithiumbatteri – Ekaplosionsfare ved fejlagtig håndtering.
Udskiftning mä kun ske med batteri
af samme fabrlkat og type.
Lever det brugte batterie tilbage til leverandøren.

Model MTS-1000 **MIDI Implementation Chart**

Date : 6.01.1989
Version : 1.0

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	×	×	
	Changed	×	×	
Mode	Default	×	×	
	Messages	×	×	
	Altered	~~~~~~~~~~	×	
Note Number		×	×	
	True Voice	~~~~~~~~~~	×	
Velocity	Note ON	×	×	
	Note OFF	○ *3	×	
After Touch	Key's	×	×	
	Ch's	×	×	
Pitch Bend		×	×	
Control Change		×	×	
Prog Change		○ 0—127	×	
	True #	~~~~~~~~~~	×	
System Exclusive		○	○	TEMPO MAP DATA
Common	: Song Pos	○	×	
	: Song Sel	○	×	
	: Tune	×	×	
System Real Time	: Clock	○ *1	○ *2	CONTINUE not recognized
	: Commands	○ *1	○ *2	CONTINUE not recognized
Aux Mes-sages	: Local ON/OFF	×	×	
	: All Notes OFF	○ *3	×	
	: Active Sense	×	×	
	: Reset	×	×	
Notes		*1 = Not transmitted during TAP WRITE and EXT MIDI in TEMPO PROGRAM mode. *2 = Recognized only during EXT MIDI in TEMPO PROGRAM mode. *3 = Transmitted only on PANIC STOP.		

Mode 1 : OMNI ON, POLY
Mode 2 : OMNI ON, MONO
Mode 3 : OMNI OFF, POLY
Mode 4 : OMNI OFF, MONO

○ : Yes
× : No

Setting Chart for TASCAM Tape Recorders

	Recorder's Setting						MTS-1000 Setting	
	Connector to be interfaced with T/C GEN OUT of MTS-1000	Track used for Time Code	Input Level Adjustment	Sync Lock	Filter	Baud Rate of ACC2	FM Servo	DC Servo Offset
MSR-16	INPUT 16	16	Not available	ON		9600	9.6 kHz	
TSR-8	INPUT 8	8	Available	ON		9600	9.6 kHz	
238	INPUT 8	8	Available	ON (Tape Sync)	OUT	9600		Available
644	EXT SYNC IN	4	Available	ON (Set SYNC SEL to EXT)		9600	9.6 kHz	
688	EXT SYNC IN	8	Available	ON (Set SYNC SEL to EXT)		9600	9.6 kHz	

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MTS-1000/IF-1000

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TEAC DEUTSCHLAND GmbH	Bahnstraße 12, 6200 Wiesbaden-Erbenheim, West Germany Tel.: 06121-71580
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